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1921/22

The Bulletin of the University of Minnesota

*The College of Agriculture, Forestry,
and Home Economics
Announcement of
Courses in Agriculture for the Year
1921-1922*



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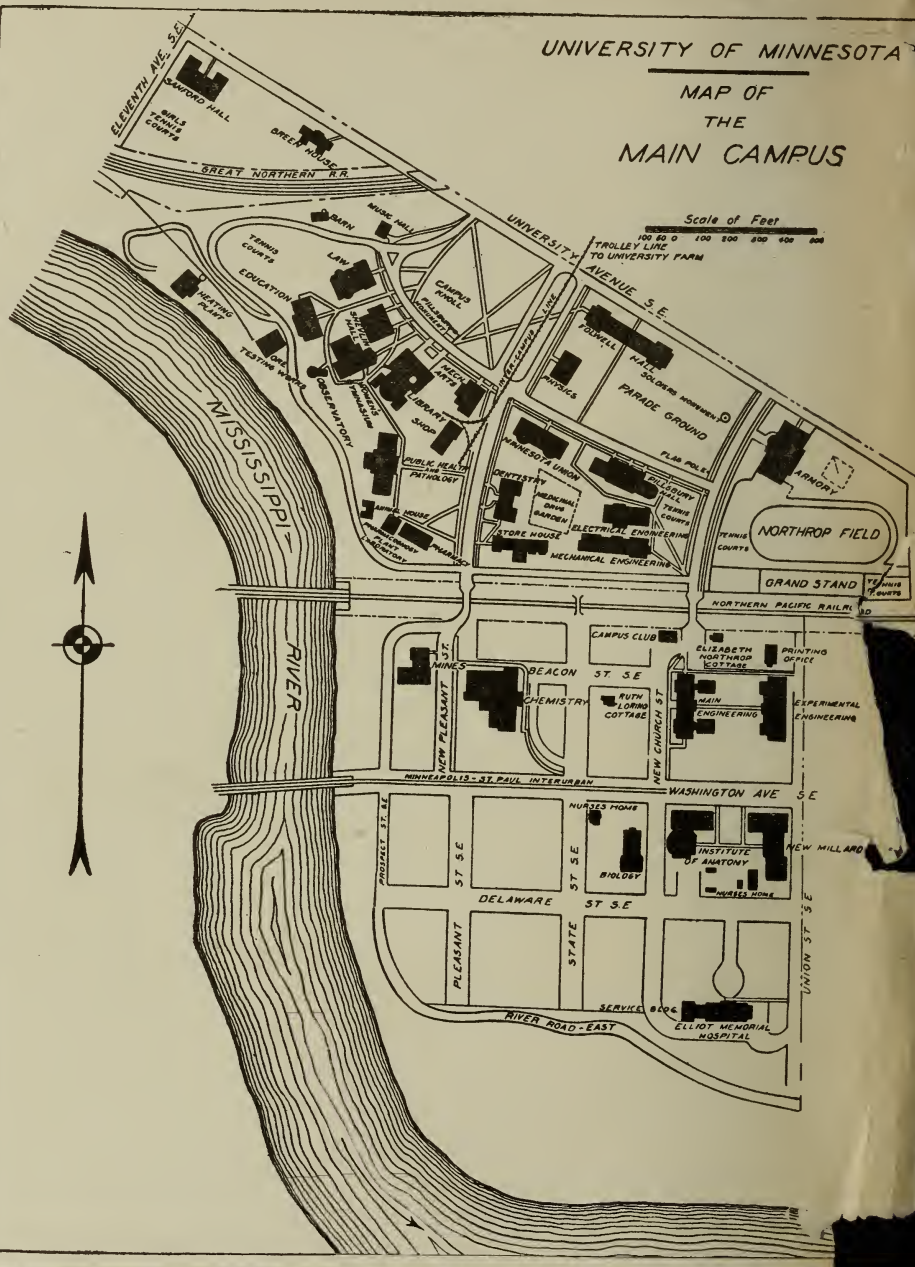
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UNIVERSITY OF MINNESOTA

MAP OF THE MAIN CAMPUS



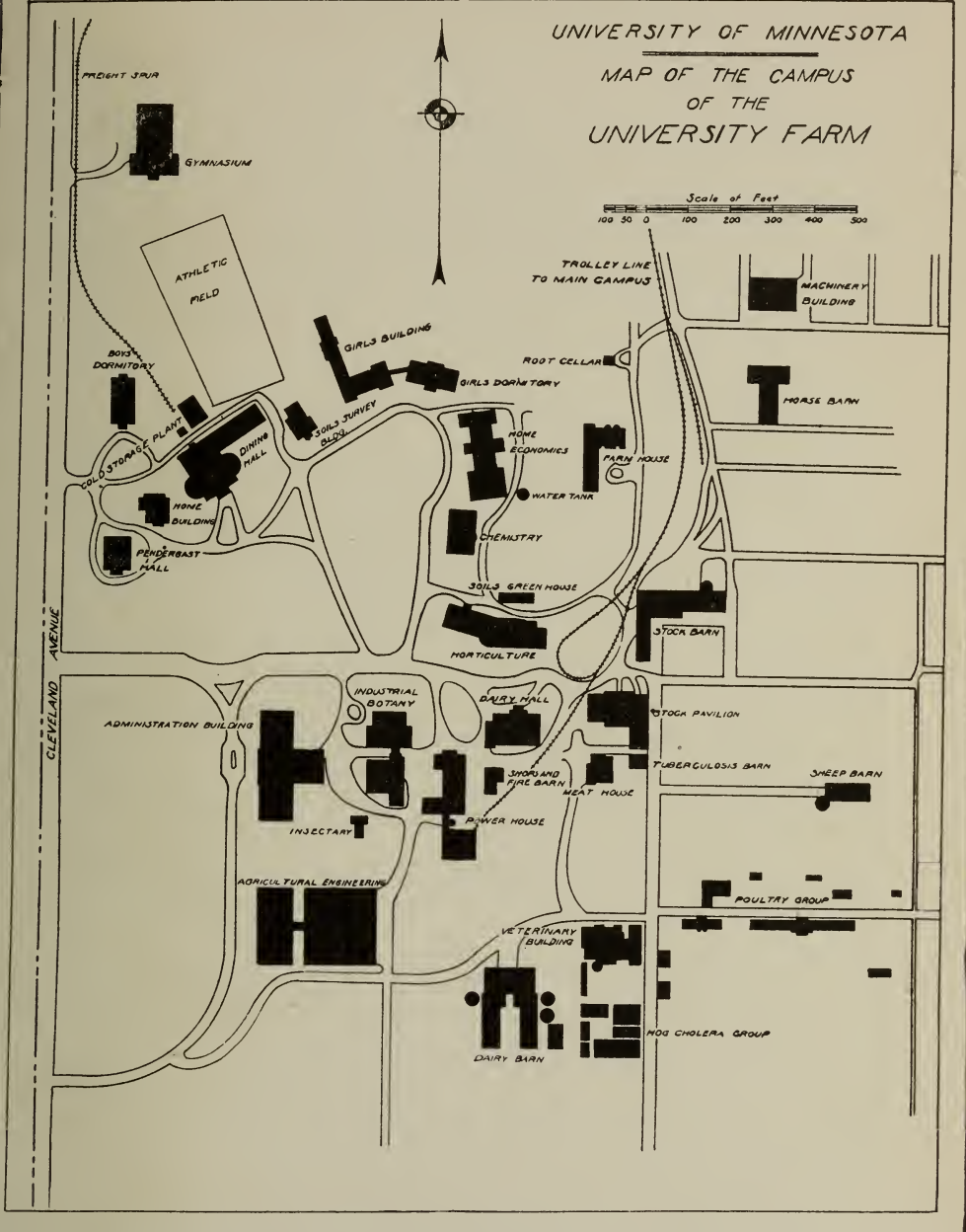
Area of Main Campus, 108.5 acres

UNIVERSITY OF MINNESOTA

MAP OF THE CAMPUS OF THE UNIVERSITY FARM



Scale of Feet
100 50 0 100 200 300 400 500



Area of University Farm, 422.56 acres

1921							1922													
JULY							JANUARY							JULY						
Su	Mo	Tu	W	Th	Fr	Sa	Su	Mo	Tu	W	Th	Fr	Sa	Su	Mo	Tu	W	Th	Fr	Sa
..	..	..	..	..	1	2	1	2	3	4	5	6	7	..	..	..	..	..	..	1
3	4	5	6	7	8	9	8	9	10	11	12	13	14	2	3	4	5	6	7	8
10	11	12	13	14	15	16	15	16	17	18	19	20	21	9	10	11	12	13	14	15
17	18	19	20	21	22	23	22	23	24	25	26	27	28	16	17	18	19	20	21	22
24	25	26	27	28	29	30	29	30	31	..	..	..	..	23	24	25	26	27	28	29
31	..	..	..	..	..	..	..	..	..	..	..	..	..	30	31	..	..	..	..	..
AUGUST							FEBRUARY							AUGUST						
..	1	2	3	4	5	6	..	..	..	1	2	3	4	..	..	1	2	3	4	5
7	8	9	10	11	12	13	5	6	7	8	9	10	11	6	7	8	9	10	11	12
14	15	16	17	18	19	20	12	13	14	15	16	17	18	13	14	15	16	17	18	19
21	22	23	24	25	26	27	19	20	21	22	23	24	25	20	21	22	23	24	25	26
28	29	30	31	..	..	..	26	27	28	..	..	..	..	27	28	29	30	31	..	..
..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
SEPTEMBER							MARCH							SEPTEMBER						
..	..	..	..	1	2	3	..	..	..	1	2	3	4	..	..	..	..	..	1	2
4	5	6	7	8	9	10	5	6	7	8	9	10	11	3	4	5	6	7	8	9
11	12	13	14	15	16	17	12	13	14	15	16	17	18	10	11	12	13	14	15	16
18	19	20	21	22	23	24	19	20	21	22	23	24	25	17	18	19	20	21	22	23
25	26	27	28	29	30	..	26	27	28	29	30	31	..	24	25	26	27	28	29	30
..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
OCTOBER							APRIL							OCTOBER						
..	..	..	..	..	..	1	..	..	..	..	..	..	1	1	2	3	4	5	6	7
2	3	4	5	6	7	8	2	3	4	5	6	7	8	8	9	10	11	12	13	14
9	10	11	12	13	14	15	9	10	11	12	13	14	15	15	16	17	18	19	20	21
16	17	18	19	20	21	22	16	17	18	19	20	21	22	22	23	24	25	26	27	28
23	24	25	26	27	28	29	23	24	25	26	27	28	29	29	30	31	..	..	..	..
30	31	..	..	..	..	..	30	..	..	..	..	..	..	..	..	..	..	..	..	..
NOVEMBER							MAY							NOVEMBER						
..	..	1	2	3	4	5	..	1	2	3	4	5	6	..	..	..	1	2	3	4
6	7	8	9	10	11	12	7	8	9	10	11	12	13	5	6	7	8	9	10	11
13	14	15	16	17	18	19	14	15	16	17	18	19	20	12	13	14	15	16	17	18
20	21	22	23	24	25	26	21	22	23	24	25	26	27	19	20	21	22	23	24	25
27	28	29	30	..	..	..	28	29	30	31	..	..	..	26	27	28	29	30	..	..
..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
DECEMBER							JUNE							DECEMBER						
..	..	..	..	1	2	3	..	..	..	..	1	2	3	..	..	..	..	..	1	2
4	5	6	7	8	9	10	4	5	6	7	8	9	10	3	4	5	6	7	8	9
11	12	13	14	15	16	17	11	12	13	14	15	16	17	10	11	12	13	14	15	16
18	19	20	21	22	23	24	18	19	20	21	22	23	24	17	18	19	20	21	22	23
25	26	27	28	29	30	31	25	26	27	28	29	30	..	24	25	26	27	28	29	30
..	..	..	..	..	..	..	..	..	..	..	..	..	..	31	..	..	..	..	..	..

CALENDAR

1921-1922

1921

September	14	Wednesday	Registration closes except for new students
September	20-27	Week	Examinations for removal of spring quarter conditions. Entrance examinations Registration of new students. Payment of fees Physical examinations for new students
September	28	Wednesday	Fall quarter begins, 7:45 a.m.
October	3	Monday	School of Agriculture, first term begins
October	15	Saturday	Class Scrap Day; all classes dismissed the fourth hour
October	20	Thursday	Senate meeting, 4:30 p.m.
October	28	Friday	Last day for removal of spring quarter incompletes
November	5	Saturday	Home Coming Day; classes dismissed the third and fourth hours
November	11	Friday	Armistice Day; a holiday
November	14-26		Advanced Creamery Operators' Short Course
November	24	Thursday	Thanksgiving Day; a holiday
November	28	Week	Ice-Cream Makers' Short Course
December	3		
December	5-10	Week	Milk-Plant Operators' Short Course
December	15	Thursday	Senate meeting, 4:30 p.m.
December	21	Wednesday	Last day for winter quarter registration except for new students Fall quarter closes, 4:50 p.m. School of Agriculture, first term closes Christmas vacation begins, 4:50 p.m.
December	27	Week	Registration of new students. Payment of winter quarter fees
January	3		

1922

January	2-7	Week	Farmers' and Home-Makers' Week Short Course
January	2	Week	Beginning Creamery Operators' Short Course
February	11		
January	4	Wednesday	Winter quarter begins, 8:15 a.m.
January	9	Monday	School of Agriculture, second term begins
February	3	Friday	Last day for removal of fall quarter incompletes

February	13-26	Week	Advanced Cheese-Makers' Short Course
February	16	Thursday	Senate meeting, 4:30 p.m.
February	22	Wednesday	Washington's Birthday; a holiday
March	18	Saturday	Last day for spring quarter registration except for new students
March	23	Thursday	Winter quarter closes. Spring vacation begins, 5:20 p.m.
March	23-28	Week	Registration of new students. Payment of spring quarter fees
March	29	Wednesday	Spring quarter begins, 7:45 a.m. School of Agriculture, second term closes
April	3-8	Week	Boys' and Girls' Week Short Course
April	28	Saturday	Last day for removal of winter quarter incompletes
May	18	Thursday	Senate meeting, 4:30 p.m.
May	30	Tuesday	Memorial Day; a holiday
June	11	Sunday	Baccalaureate service
June	13	Tuesday	Spring quarter closes
June	14	Wednesday	Fiftieth annual commencement
June	17-19		Summer session registration. Payment of fees
June	20	Tuesday	Summer session begins
July	28	Friday	Summer session closes

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¹ Resigned, June 30, 1921.

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¹ Leave of absence, 1921-22.

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FRANK H. MACDOUGALL, Ph.D., Associate Professor of Chemistry
BRUCE D. MUDGETT, B.A., Associate Professor of Economics
HENRY F. NACHTRIEB, B.S., Professor of Animal Biology
HOWARD S. NOBLE, B.A., M.B.A., Assistant Professor of Accounting
OSCAR W. OESTLUND, Ph.D., Assistant Professor of Animal Biology
EVERETT W. OLMSTED, Ph.D., Litt.D., Professor of Romance Languages
RUTH S. PHELPS, M.A., Associate Professor of Romance Languages
THOMAS S. ROBERTS, M.D., Professor of Ornithology
C. OTTO ROSENDAHL, Ph.D., Professor of Botany
CARL SCHLENKER, B.A., Professor of German
CARLYLE M. SCOTT, Professor of Music
COLBERT SEARLES, Ph.D., Professor of Romance Languages
CHARLES F. SIDENER, B.S., Professor of Chemistry
CHARLES P. SIGERFOOS, Ph.D., Professor of Zoology
M. CANNON SNEED, Ph.D., Associate Professor of Chemistry
J. WARREN STEHMAN, M.A., Assistant Professor of Economics
FLETCHER H. SWIFT, Ph.D., Professor of Education
JOSEPHINE E. TILDEN, M.S., Professor of Botany
ARTHUR J. TODD, Ph.D., Professor of Sociology
MARVIN J. VAN WAGENEN, Ph.D., Assistant Professor of Educational
Psychology
HERBERT WOODROW, Ph.D., Associate Professor of Psychology
ANTHONY ZELNY, Ph.D., Professor of Physics

J. FRANKLIN EBERSOLE, Ph.B., Professorial Lecturer in Economics
 ANTONIO HERAS, Bachiller, Licenciado en Derecho, Professorial Lecturer
 in Romance Languages
 LOUALLEN F. MILLER, M.A., Professorial Lecturer in Physics
 JEAN H. ALEXANDER, M.A., Instructor in Education
 IRA S. ALLISON, B.A., Instructor in Geology
 ANNE G. BENTON, B.A., Instructor in Bacteriology
 CHARLES BIRD, Ph.D., Instructor in Psychology
 LOUIS A. BOETTIGER, M.A., Instructor in Sociology
 JOSEPH E. CUMMINGS, M.A., Instructor in Economics
 LYNWOOD G. DOWNS, M.A., Instructor in German
 CHARLES B. DRAKE, M.A., Instructor in Romance Languages
 MARGUERITE GUINOTTE, Brevet Supérieur, Certificat d'Aptitude Pédagogique,
 Instructor in Romance Languages
 JOHN W. GRUNER, M.S., Instructor in Geology
 ARTHUR M. JOHNSON, Ph.D., Instructor in Botany
 WALTER M. LAUER, M.S., Instructor in Chemistry
 COWDEN LAUGHLIN, Ph.D., Instructor in German
 CHARLES E. LIVELY, M.A., Instructor in Sociology
 VICTOR H. PELZ, M.S., Instructor in Economics
 GERTRUDE REEVES, Instructor in Pianoforte
 ADOLPH RINGOEN, Ph.D., Instructor in Animal Biology
 KARL SCHEURER, Instructor in Violin
 GEORGE M. SCHWARTZ, M.A., Instructor in Geology
 DAVID O. SPIESTERSBACH, M.S., Instructor in Bacteriology and Immunology
 GEORGE A. THIEL, M.A., Instructor in Geology
 JOSEPH VALASEK, B.S., Instructor in Physics
 W. COURTNEY WERNER, B.A., Instructor in Geology
 ROBERT G. GREEN, B.A., Assistant in Bacteriology and Immunology

FACULTY COMMITTEES

1921-1922

Executive.—The Executive Committee of the Department of Agriculture

Curriculum.—MR. FREEMAN, MISS BIESTER, MR. A. BOSS, MR. CHEYNEY,
 MR. ECKLES, MR. RILEY, MR. STORM, MISS WEIGLEY, MISS WELLER,
 MR. WEST

Enrolment.—MR. FIELD, MISS CLARA BROWN, MR. WENTLING, MR. MORROW,
 MR. WEST

Students' Work.—MR. FREEMAN, MISS WEIGLEY, MR. ALDERMAN, MR.
 CHEYNEY, MR. NICHOLSON, MRS. LADD.

Student Organizations.—MR. LANSING, MR. DUTCHER, MISS MORSE, MISS
 WELLER, MR. FREEMAN

Faculty Business.—MR. GORTNER, MR. STAKMAN, MISS PHELPS, MR. RUGGLES
Farm Experience.—MR. A. BOSS, MR. ALDERMAN, MR. ECKLES

Program.—MR. FITCH, MR. ALLISON, MR. RUGGLES, MR. HAYES, MISS
 CHILD

Scholarships.—MR. ECKLES, MISS WEIGLEY, MR. GORTNER, MR. HAYES,
 MR. BLACK, MR. FREEMAN

GENERAL INFORMATION

ADMISSION

New students are admitted at the opening of any quarter.

All students entering for the first time must submit their credentials to the Enrolment Committee.

Admission is either by certificate or by examination. Candidates must have completed the equivalent of a four-year high-school course and must present:

1. Four units of English; or three units of English and four units of a foreign language; or three units of English and two units in each of two foreign languages.
2. One unit of elementary algebra and one unit of plane geometry.
3. Enough additional work to make in all fifteen units, of which not more than four may be in subjects not listed in the admission groups in the general information bulletin.

Graduates of the School of Agriculture of the University of Minnesota who have completed the two summers of supervised work offered in the school course, one additional school year, and one additional summer's work, or the equivalent thereof, will be admitted to the College of Agriculture, Forestry, and Home Economics.

For details of admission requirements and definition of "unit," see the bulletin of general information.

Every prospective student is urged to obtain, before entering college, at least six months' practical experience on a farm. Entering students whose farm experience credentials are not satisfactory will be examined as to their familiarity with farm practices, and farm experience will be required during the college course in accordance with the results of these examinations. For students who major in dairy husbandry at least three of the six months of approved farm experience must be on an accredited dairy farm.

Applicants for admission are urged to present physics (1 unit) and chemistry (1 unit), for entrance credits. If these subjects are not completed in the high school, they will have to be taken in the University, thus postponing some of the vocational courses.

FEES

Free tuition.—The state will pay the tuition of any student who served in the army, navy, or marine corps of the United States during any war in which the United States has been involved, including members of the national guard or who, upon the call of the president, performed military service outside the borders of Minnesota in any trouble with Mexico; and of any student who performed overseas service as a regularly enlisted full-time worker of the Red Cross, engaged in nursing the sick or assisting in the care of soldiers in any government hospital, field, or camp, which service has been officially recognized by the national government. The

amount of this free tuition is not to exceed \$200 for any one person and the benefits of this act will not extend beyond July 1, 1924. The amount to be paid in any year will be limited by the legislative appropriation for that year.

Any amount applied for as bonus under the State Bonus Law is deducted from the \$200 available for tuition.

Application for this free tuition should be made to the registrar's office at the time of registration.

This applies only to students, who at the time of enlistment were citizens and residents of the state of Minnesota.

Tuition includes all of the regular quarter charges listed below except the deposit and penalty fees for change of registration, late registration, condition examinations, etc.

Tuition fee (per quarter)

Residents of Minnesota.....	\$20.00
Non-residents	30.00
Deposit (first quarter only).....	5.00
Military deposit (for all students registered for military drill).....	10.00
Health fee (per quarter).....	2.00
Minnesota Union or Shevlin Hall (per quarter).....	1.00
Post-office box (per quarter).....	.20
Special fees	
Examination for removal of conditions.....	1.00
Examinations for credit (after the first quarter in residence).....	5.00
Special examinations.....	5.00
Change of registration	2.00

Late registration.—Old students must indicate their registration not later than two weeks before the day set for classes to begin. All students must complete their registration (including payment of fees) before the day set for classes to begin. The penalty for delay in either indicating or completing registration is two dollars. An additional dollar is charged for each day of delay after the last day set for the completion of registration and a similar charge is made for each day of delay after the last day set for payment of fees

Important.—The regulations require that no student be allowed to register after the quarter opens except by special committee action.

FACULTY REGULATIONS

Students are held responsible for compliance with all faculty regulations. These regulations are published in a booklet issued to students at the time of registration.

REQUIREMENTS FOR GRADUATION AND DEGREES

After the completion of the prescribed course of study, including all of the required work and the requisite amount of elective work equivalent to a total of 204 (207, in June, 1922) credit hours, candidates will be recommended for graduation with the degree of Bachelor of Science.

CANDIDATES FOR THE TEACHER'S CERTIFICATE IN AGRICULTURE
AND HOME ECONOMICS

Beginning with the year 1921-22, the University Teacher's Certificate will be granted only to graduates of the College of Education. Students expecting to receive this certificate upon graduation shall be registrants in the College of Education from the beginning of the junior year. Students in the College of Agriculture, Forestry, and Home Economics desiring the University Teacher's Certificate shall in addition to their registration in this college register also in the College of Education. For the required curriculum in Agricultural Education, see page 23.

COURSE OF STUDY IN AGRICULTURE

The course of study is made up of 204* credit hours of work, including :

1. Required subject courses, 101 to 108 credit hours, *which every student must complete before graduation* (page 19).
2. Elective subject courses, 96 to 103 credit hours, distributed according to several methods described below (page 20).

EXPLANATION OF TERMS AND COURSE NUMBERS

The quarters in which courses are offered are indicated by the letters f (fall), w (winter), s (spring), and su (summer) following the course number. For example: 5f,w,s indicates that Course 5 is given in the fall quarter and is repeated in the winter and again in the spring quarter; 5f-6w indicates a two-quarter course extending through the fall and winter quarters; and 5f,w-6w,s, indicates that Course 5-6 is given in the fall and winter quarters and repeated through the winter and spring quarters.

All undergraduate courses are numbered from 1 to 100. All courses open to undergraduates and graduates are numbered from 101 to 200.

Numbers following the descriptive name of a course indicate the number of credit hours.

Course numbers in parentheses, following the number of credit hours, indicate prerequisite courses.

Descriptions of the courses listed in the following outline of the curricula, together with those of additional courses offered as electives, will be found on pages 36 to 72. The program of classes is printed on pages 76 and following. The divisional statements are arranged alphabetically according to the names of the divisions.

One *credit hour* is equivalent to (1) one lecture or recitation period requiring two hours of preparation, (2) two periods of laboratory work requiring one hour of preparation, or (3) three periods of laboratory work with no preparation, each week for one quarter.

A *major* is a series of courses equivalent to from 24 to 36 credit hours chosen from one of the elective groups.

A *minor* is a series of courses equivalent to 18 credit hours chosen from one of the elective groups.

A *required* course is a course required of all students for graduation, irrespective of their major sequence.

A *limited elective* course is an elective which may not be chosen from the same group as the major or minor.

A *free elective* course may be chosen from any courses offered in the University for which the student has completed the prerequisites.

In planning registration note particularly (a) prerequisites, (b) classes of students (fr., soph., jr., or sr.) to which courses are offered, (c) number

* Students graduating in June, 1922 will be required to complete 207 credit hours for their degrees.

of credits, (d) quarter or quarters offered, and be sure that provision is made in registration for the proper sequence of continuation courses.

Registration for courses as electives in other colleges of the University must be in conformity with regulations of the college offering the course.

Elective courses in the College of Science, Literature, and the Arts are separated into Junior College courses, open to freshmen and sophomores, and Senior College courses, open to juniors and seniors. In addition to satisfying other prerequisites an average grade of C must be maintained for the first two years in order to register for a Senior College elective.

REQUIRED COURSES

1. Required subject courses, 101 to 108 credit hours, *are required of every student before graduation*. These constitute approximately half of the curriculum and are considered fundamental and necessary to any course of study in agriculture. Every student must complete these subject courses, if possible, before the end of the sophomore year.

All of the following work is required of every student except for the exemptions indicated. For some students this represents more than the regular amount of work of 17 credit hours per quarter. In such cases those subjects listed below which can not be taken in the freshman and sophomore years must take precedence the following year. Registration for from 15 to 18 credit hours of work each quarter will be allowed without special permission. Care should be taken in registration to give precedence to courses offered only one quarter.

1. *Non-credit courses* required for graduation in addition to the 204 credit hours.
Freshman lectures. A course of six lectures intended primarily to familiarize the new student with the college, college customs, and methods of procedure. Offered only in the fall quarter. Must be taken in the freshman year.

Military drill. Three hours per week throughout the freshman and sophomore years. Students found to be physically unfit may be required to substitute special corrective exercises in gymnasium.

Phys. Educ. 1f,w,s, Personal Hygiene. Two hours per week for six weeks. Must be taken the first quarter in residence.

2. *General courses*.—The following courses may be registered for any quarter that they are offered except that the proper sequence of continuation courses and the prerequisites must be observed. Ordinarily, if botany is registered for in the freshman year, registration for zoology should be postponed until the sophomore year, and vice versa.

Agr. Biochem. 7f,w-8w,s, General Agricultural Biochemistry, 10 (Chem. 1-2-3 or 9-10)

Agron. 1f,w,s, Farm Crops, 3

An. Biol. 14f-15w-16s, General Zoology, 9

An. Husb. 1f,w, Types and Breeds of Livestock, 5

Bact. 1f,w,s, Elementary Bacteriology, 5 (chemistry, 10 credits)

Bot. 4f-5w-6s, General Botany, 9

Chem. 1f-2w-3s, General Inorganic Chemistry, 12. Students presenting a year of high-school chemistry may omit this course and register for Chem. 9-10. Those required to take this course because of inability to carry successfully Chem. 9-10 will be allowed not more than 10 credits.

Chem. 9f-10w, Advanced General Inorganic Chemistry, 10. Those required to take Chem. 1-2-3 may omit this course.

Dy. Husb. 1f,w,s, Elements of Dairying, 5

Econ. 5f,w, General Economics, 5. Not open to freshmen.

Econ. 6f,w,s, Agricultural Economics, 3 (Econ. 5)

Farm Eng. 3f,s, Mechanical Drawing, 2

Farm Eng. 8f,w, Farm Engineering, 5

Farm Eng. 11f,w,s, Applied Mathematics, 5

Farm Eng. 23f,s, General Physics, 5. Those presenting a year of high-school physics may omit this course and substitute 5 credits elective later in their course of study.

For. 26f,w, Tree Crops, 1

Hort. 6f, Fruit-Growing, 3; or Hort. 32s, Vegetable-Growing, 3

Rhet. 1f,w,s, Rhetoric I,* 3

Rhet. 2f,w,s, Rhetoric II, 3 (Rhet. 1)

Rhet. 3f,w,s, Rhetoric III, 3 (Rhet. 2)

Rhet. 4f,w,s, Elementary Rhetoric, 3. Required only of those who are found to be unable to carry Rhet. 1.

Rhet. 11f,w,s, Argumentation, 3 (Rhet. 3) or Rhet. 31f,w,s, English Literature I, 5 (Rhet. 3)

Rhet. 22f,w,s, Public Speaking, 3 (Rhet. 3)

Soils 4f, Soils, 3 (chemistry 10 credits)

Soils 5s, Soil Fertility, 3 (Soils 4)

Only a limited number of elective courses are open to freshmen. First-year students, who for any reason are unable to follow the regular curriculum, are advised to fill their programs with a required course from the sophomore schedule, if possible, and postpone the choice of electives until the sophomore year. This plan will enable the student to obtain a better viewpoint from which to select his electives and allow a wider range of subjects from which to choose.

The following divisions and departments offer elective work which is open to freshmen. For the descriptions of available courses see pages 36 to 72, and for departments marked S., L., and A., see bulletin of the College of Science, Literature, and the Arts.

Agricultural Education

Farm Engineering

Forestry

German

History (S., L., and A.)

Home Economics

Mathematics (S., L., and A.)

Poultry Husbandry

Romance Languages

ELECTIVE COURSES

2. Elective subject courses, 96 to 103 credits, may be distributed according to one of the following methods: A (page 21) or B (page 22). Every student is required to file in the registrar's office by the end of his sophomore year a statement of the course of study which he aims to pursue during his junior and senior years. Such statements from each student will make it possible to provide a workable program of subject courses. The student may make, and is strongly advised to make, this statement at the end of his freshman year. In this case he would have ample opportunity to change his course at the end of the sophomore year. A change from one method or course of study to another after the close of the sophomore year is permitted only on approval and does not exempt the student from any of the requirements of the course which he finally selects. Such changes

* Special attention is called to rules on delayed credit and to regulations (on page 68) for students with insufficient preparation in English.

usually involve inconvenience and sometimes loss of credit to the student. All students are invited to consult with the dean of the college concerning the selection of courses of study.

Method A—Open Elective Course of Study

Recommended for those students who are preparing themselves for some special line of work and who have definitely in mind the relations of subjects offered to this work.

Under this method the student with the approval of his adviser may select any course of study which complies with the following requirements:

- a. A major of from 24 to 36 credit hours.
- b. A minor of 18 credit hours.
- c. Limited electives amounting to 50 per cent of the remaining number of credit hours, which must be selected outside of the groups from which the major and minor have been chosen, and
- d. Free electives, sufficient to meet the number of credit hours required for graduation chosen from any of the courses offered in the University.

The major and minor must be selected from different elective groups, except that students whose major is chosen from group 4 (see below), Agricultural Sciences and Plant Industry, may select their minor from a different field of work in the same group.

ELECTIVE GROUPS

A. Groups from which major, minor, or electives may be chosen

1. Agricultural Economics and Farm Management, including
Agricultural Economics
Farm Management
- 2.* Agricultural Education and Agricultural Extension, including
Agricultural Education
Agricultural Extension
3. Animal Industry, including
Animal Husbandry
Dairy Husbandry
Poultry Husbandry
Veterinary Medicine
4. Agricultural Sciences and Plant Industry, including
Agricultural Biochemistry
Agronomy
Entomology and Economic Zoology
Horticulture
Plant Pathology and Botany
Soils
5. Farm Engineering, including
Farm Engineering

B. Groups from which electives only may be chosen

1. Bee Culture
2. Forestry
3. Home Economics
4. Military Science and Tactics
5. Physical Education
6. Rural Publications and Journalism
7. Courses in departments of other schools and colleges of the University

* All students intending to teach agriculture are referred to the required curriculum in Agricultural Education.

Method B—*Suggested Elective Courses of Study*

The following courses of study have been arranged and are recommended by the several departments as useful and suggestive. Changes may be made with the approval of the Students' Work Committee. The subject-course programs and the offerings of subjects in different quarters are based primarily on these courses of study so that students will have an opportunity of getting the subject courses in their proper sequence and without conflict. These specified courses are offered in the hope that they will also be of value to the student in vocational guidance. Students who desire to select any of these courses with modifications should study the changes involved to see whether or not the desired modifications admit of a possible program.

I. GENERAL AGRICULTURE

Recommended for those students who desire a general course in agriculture. It is designed especially for those who aim to obtain a broad general training and for those who expect to engage in general farming. It aims to emphasize two features, viz.: to include in its subject-matter the principal fields of study in agriculture and to select the essential courses necessary to an understanding of these fields. A sufficient number of electives is provided to permit the student to emphasize any special line in which he may become interested.

This course is completely included in the course in Agricultural Education, Agricultural Extension, in the general courses in Farm Management, and Agricultural Economics. It is included, with only a few substitutions, in the courses in Animal Husbandry, Dairy Husbandry, and in Horticulture.

JUNIOR YEAR

SENIOR YEAR

Fall Quarter

Agr. Biochem. 15f, Principles of Animal Nutrition, 3 (Agr. Biochem. 7-8)
Agron. 121f, Cereal Crops, 3 (Agron. 1, bot. 9 cred.)
Agron. 131f, Principles of Genetics, 3 (bot. 9 cred., an. biol. 9 cred.)
An. Husb. 3f, Market Classes of Live-stock, 3
Hort. 6f, Fruit-Growing, 3 (May be omitted if completed as a part of the general requirements)
Electives, 2 or 5

Agron. 102f,w, Farm Management II: Organization, 3 (Agron. 1, Econ. 6, An. Husb. 6 or 8, Soils 5)
Dy. Husb. 101f, Milk Production, 5 (Dy. Husb. 1)
Pl. Path. 1f, Plant Pathology, 5 (bot. 9 cred.)
Electives, 4

Winter Quarter

Agron. 122w, Corn and Potato Crops, 3 (Agron. 1, bot. 9 cred.)
An. Husb. 4w, Market Classes of Live-stock, 3 (An. Husb. 3)
Ent. 3f,w, Elementary Economic Entomology, 3 (an. biol. 9 cred.)
Electives, 8

Agron. 103w,s, Farm Management II: Operation, 3 (Agron. 102)
An. Husb. 5w, Livestock-Breeding, 3 (Agron. 131)
Econ. 117w,¹ Prices of Farm Products, 3 (sr. class. or 13 cred. in econ. and farm mgt. and 5 cred. in soc. sciences)
Farm Eng. 7w, Farm Structures, 3 (Farm Eng. 3)
Sociol. 14f,w, Rural Sociology, 3 (sr. class.)
Electives, 2

¹ Econ. 50s, Farm Finance, 3 (Econ. 3-4 or 5, 6) or Econ. 116f,w, Economics of Agricultural Production, 3 (see tabular statement) may be substituted for this course.

Spring Quarter

Agron. 11s, Farm Machinery, 3	Vet. 8s, Veterinary Studies, 5
Agron. 123s, Forage and Fiber Crops, 3 (Agron. 1, bot. 9 cred.)	Electives, 12
An. Husb. 8s, Fundamentals of Feeding, 3 (Agr. Biochem. 15)	
Econ. 85f,s, Principles of Marketing, 3 (Econ. 6)	
Hort. 32s, Vegetable-Growing, 3 (May be omitted if completed as a part of the general requirements)	
Electives, 2 or 5	

2. GENERAL COURSE IN AGRICULTURAL ECONOMICS

Suggested for those who desire to take a general course with emphasis upon agricultural economics. In addition to the subjects listed under the General Course in Agriculture, above, the student is advised to take the following:

- Econ. 28s, Principles of Accounting, 5 (Econ. 5)
- Econ. 50s, Farm Finance, 3 (Econ. 6)
- Econ. 108w, Marketing of Farm Products, 3 (Econ. 85)
- Econ. 116f,w, Economics of Agricultural Production, 3 (See tabular statement.)

For additional electives consult the Division of Agricultural Economics. A limited number of substitutions may be made in the subjects of the general course with the consent of the Students' Work Committee.

3. AGRICULTURAL EDUCATION

(Required for University Teacher's Certificate)

Students who desire to teach agriculture in the high schools or other secondary schools may obtain the University Teacher's Certificate in addition to the regular college degree, upon graduation, by registering in both the College of Education and the College of Agriculture, Forestry, and Home Economics in the junior and senior years. The following course has been approved by both colleges and is required of all students who are candidates for the University Teacher's Certificate.

The University Teacher's Certificate entitles the holder to teach agriculture in any Minnesota high school for two years. Upon satisfactory completion of the teaching of these two years, the holder may have the certificate renewed as a life certificate by approval of the president of the University and of the State Department of Education. Every student who expects to teach agriculture and who expects to obtain the University endorsement for a certificate must complete the subjects listed in this course.

JUNIOR YEAR

Fall Quarter

Agr. Biochem. 15f, Principles of Animal Nutrition, 3 (Agr. Biochem. 7-8)
 Agr. Educ. 11f,w,s, Principles of Vocational Education, 3
 Agron. 121f, Cereal Crops, 3 (Agron. 1, bot. 9 cred.)
 Agron. 131f, Principles of Genetics, 3 (bot. 9 cred., an. biol. 9 cred.)
 An. Husb. 3f, Market Classes of Live-stock, 3
 Hort. 6f, Fruit-Growing, 3 (May be omitted if completed as a part of the general requirements)

SENIOR YEAR

Agr. Educ. 41f,w,s, Apprentice Teaching, 2 (Agr. Educ. 131)
 Agron. 102f,w, Farm Management II: Organization, 3 (Agron. 1, Econ. 6, An. Husb. 6 or 8, Soils, 5)
 Dy. Husb. 101f, Milk Production, 5 (Dy. Husb. 1)
 Pl. Path. 1f, Plant Pathology, 5 (bot. 9 cred.)
 Electives, 2

Winter Quarter

Agr. Educ. 21f,w, Vocational Education, 3
 Agron. 122w, Corn and Potato Crops, 3 (Agron. 1, bot. 9 cred.)
 An. Husb. 4w, Market Classes of Live-stock, 3 (An. Husb. 3)
 An. Husb. 5w, Livestock-Breeding, 3 (Agron. 131)
 Ent. 3f,w, Elementary Economic Entomology, 3 (an. biol. 9 cred.)
 Electives, 2

Agr. Educ. 42f,w, Teaching, 3 (Agr. Educ. 41, Agron. 121, 122, 123)
 Agr. Educ. 75f,w, Visual Presentation, 3 (Agr. Educ. 11)
 Agron. 103w,s, Farm Management II: Operation, 3 (Agron. 102)
 Econ. 117w,¹ Prices of Farm Products, 3 (sr. class or 13 cred. in econ. and 5 cred. in soc. sciences)
 Farm Eng. 7w, Farm Structures, 3 (Farm Eng. 3)
 Sociol. 14f,w, Rural Sociology, 3 (sr. class.)

Spring Quarter

Agr. Educ. 131f,s, Methods in Teaching High-School Agriculture, 5 (Agr. Educ. 11)
 Agron. 11s, Farm Machinery, 3
 Agron. 123s, Forage and Fiber Crops, 3 (Agron. 1, bot. 9 cred.)
 An. Husb. 8s, Fundamentals of Feeding, 3 (Agr. Biochem. 15)
 Econ. 85f,s, Principles of Marketing, 3 (Econ. 6)
 Hort. 32s, Vegetable-Growing, 3 (May be omitted if completed as a part of the general requirements)

Agr. Educ. 151f,s, Organization and Management, 5 (Agr. Educ. 11, 21)
 Vet. 8s, Veterinary Studies, 5
 Electives, 2

4. GENERAL COURSE IN AGRICULTURAL EXTENSION

Suggested for those who are preparing for county agent work or for some other phase of agricultural extension. For special modifications consult the Division of Agricultural Education.

¹ Econ. 50s, Farm Finance, 3 (Econ. 3-4 or 5, 6) or Econ. 116f,w, Economics of Agricultural Production, 3 (see tabular statement) may be substituted for this course.

JUNIOR YEAR

Fall Quarter

Agr. Biochem. 15f, Principles of Animal Nutrition, 3 (Agr. Biochem. 7-8)
 Agron. 121f, Cereal Crops, 3 (Agron. 1, bot. 9 cred.)
 Agron. 131f, Principles of Genetics, 3 (bot. 9 cred., an. biol. 9 cred.)
 An. Husb. 3f, Market Classes of Livestock, 3
 Hort. 6f, Fruit-Growing 3 (May be omitted if completed as a part of the general requirements)
 Electives, 2 or 5

Winter Quarter

Agron. 122w, Corn and Potato Crops, 3 (Agron. 1, bot. 9 cred.)
 Agr. Educ. 11f,w,s, Principles of Vocational Education, 3
 An. Husb. 4w, Market Classes of Livestock, 3 (An. Husb. 3)
 An. Husb. 5w, Livestock-Breeding, 3 (Agron. 131)
 Ent. 3f,w, Elementary Economic Entomology, 3 (an biol. 9 cred.)
 Electives, 2

Spring Quarter

Agron. 11s, Farm Machinery, 3
 Agron. 123s, Forage and Fiber Crops, 3 (Agron. 1, bot. 9 cred.)
 An. Husb. 8s, Fundamentals of Feeding, 3 (Agr. Biochem. 15)
 Econ. 85f,s, Principles of Marketing, 3 (Econ. 6)
 Hort. 32s, Vegetable-Growing, 3 (May be omitted if completed as a part of the general requirements)
 Electives, 2 or 5

SENIOR YEAR

Agron. 102f,w, Farm Management II: Organization, 3 (Agron. 1, Econ. 6, An. Husb. 6 or 8, Soils 5)
 Agr. Educ. 75f,w, Visual Presentation, 3 (Agr. Educ. 11)
 Dy. Husb. 101f, Milk Production, 5 (Dy. Husb. 1)
 Pl. Path. 1f, Plant Pathology, 5 (bot. 9 cred.)
 Electives,² 1

Agron. 103w,s, Farm Management II: Operation, 3 (Agron. 102)
 Agr. Educ. 131f,s, Methods of Teaching High-School Agriculture, 5 (Agr. Educ. 11)
 Econ. 117w,¹ Prices of Farm Products, 3 (sr. class or 13 cred. in econ. and farm mgt. and 5 cred. in soc. sciences)
 Farm Eng. 7w, Farm Structures, 3 (Farm Eng. 3)
 Sociol. 14f,w, Rural Sociology, 3 (sr. class.)

Vet. 8s, Veterinary Studies, 5
 Agr. Educ. 81s, Extension Work, 3 (6 cred. in farm mgt., 6 cred. in farm crops, 15 cred. in an. ind., 6 cred. in agr. educ.)
 Electives,² 9

5. GENERAL COURSE IN ANIMAL HUSBANDRY

For those who aim to make a special study of livestock as a preparation for (a) various phases of livestock-farming and management, for (b) the technical positions relating to livestock, and for (c) further study in graduate work when the student desires to prepare for college, experiment station, and government research and similar positions requiring a still greater degree of specialization.

¹ Econ. 50s, Farm Finance, 3 (Econ. 3-4 or 5, 6) or Econ. 116f,w, Economics of Agricultural Production, 3 (see tabular statement) may be substituted for this course.

² Agr. Educ. 82f,w,s, Agricultural Extension Field Course may be taken provided the student has pursued a broad curriculum approved by the Division of Agricultural Education and has obtained a position as assistant county agent approved by the Division of Agricultural Extension. The course carries from 3 to 10 credits based upon studies and reports to be made from time to time and evidences of proficiency obtained from other sources.

JUNIOR YEAR

Fall Quarter

Agr. Biochem. 15f, Principles of Animal Nutrition, 3 (Agr. Biochem. 7-8)
 Agron. 131f, Principles of Genetics, 3 (bot. 9 cred., an. biol. 9 cred.)
 An. Husb. 3f, Market Classes of Live-stock, 3
 Pl. Path. 1f, Plant Pathology, 5 (bot. 9 cred.)
 Vet. 2f, Anatomy of Domestic Animals, 5

SENIOR YEAR

Agron. 102f,w, Farm Management II: Organization, 3 (Agron. 1, Econ. 6, An. Husb. 6 or 8, Soils, 5)
 An. Husb. 101f, Advanced Stock-Judging, 3 (An. Husb. 2, 3-4)
 An. Husb. 7f, Meats, 3 (An. Husb. 2, Agr. Biochem. 15)
 Vet. 6f, Physiology and Hygiene of Breeding, 3 (Vet. 3-4)
 Electives, 6

Winter Quarter

Agron. 122w, Corn and Potato Crops, 3 (Agron. 1, bot. 9 cred.)
 An. Husb. 4w, Market Classes of Live-stock, 3 (An. Husb. 3)
 An. Husb. 5w, Livestock-Breeding, 3 (Agron. 131)
 Ent. 3f,w, Elementary Economic Entomology, 3 (an. biol. 9 cred.)
 Vet. 3w, Comparative Physiology, 3 (Vet. 2)

Agron. 103w,s, Farm Management II: Operation, 3 (Agron. 102)
 An. Husb. 6w, Livestock-Feeding, 5 (Agr. Biochem. 15)
 Econ. 117w,¹ Prices of Farm Products, 3 (sr. class or 13 cred. in econ. and 5 cred. in soc. sciences)
 Farm Eng. 7w, Farm Structures, 3 (Farm Eng. 3)
 Vet. 12w, Infectious Diseases, 3 (Vet. 3-4, Bact. 1)

Spring Quarter

Agron. 11s, Farm Machinery, 3
 Agron. 123s, Forage and Fiber Crops, 3 (Agron. 1, bot. 9 cred.)
 An. Husb. 9s, Pedigrees and Herd Books, 3 (An. Husb. 5)
 Econ. 85f,s, Principles of Marketing, 3 (Econ. 6)
 Vet. 4s, Comparative Physiology, 3 (Vet. 3)
 Electives, 2

An. Husb. 102s, Horse Husbandry, 3 (An. Husb. 2, 3-4)
 or
 An. Husb. 103s, Beef-Cattle Husbandry, 3 (An. Husb. 2, 3-4)
 or
 An. Husb. 104s, Sheep Husbandry, 3 (An. Husb. 2, 3-4)
 or
 An. Husb. 105s, Swine Husbandry, 3 (An. Husb. 2, 3-4)
 An. Husb. 108s, Seminar, 3 (An. Husb. 5, 6)
 Electives, 11

6. GENERAL COURSE IN DAIRY HUSBANDRY

Recommended for those students who plan definitely to engage in dairy farming or in some practical branch of dairy production or manufacture.

¹ Econ. 50s, Farm Finance, 3 (Econ. 3-4 or 5, 6) or Econ. 116f,w, Economics of Agricultural Production, 3 (see tabular statement) may be substituted for this course.

JUNIOR YEAR

Fall Quarter

Agr. Biochem. 15f, Principles of Animal Nutrition, 3 (Agr. Biochem. 7-8)
 An. Husb. 3f, Market Classes of Livestock, 3
 Dy. Husb. 101f, Milk Production, 5 (Dy. Husb. 1)
 Vet. 2f, Anatomy of Domestic Animals, 5
 Elective, 1

SENIOR YEAR

Agron. 102f,w, Farm Management II: Organization, 3 (Agron. 1, Econ. 6, An. Husb. 6 or 8, Soils 5)
 Agron. 121f, Cereal Crops, 3 (Agron. 1, bot. 9 cred.)
 Agron. 131f, Principles of Genetics, 3 (bot. 9 cred., an. biol. 9 cred.)
 Dy. Husb. 105f, Seminar I, 1 (3 courses in dy. husb.)
 Pl. Path. 1f, Plant Pathology, 5 (bot. 9 cred.)
 Vet. 6f, Physiology and Hygiene of Breeding, 3 (Vet. 3-4)

Winter Quarter

An. Husb. 4w, Market Classes of Livestock, 3 (An. Husb. 3)
 An. Husb. 6w, Livestock-Feeding, 5 (Agr. Biochem. 15)
 Ent. 3f,w, Elementary Economic Entomology, 3 (an. biol. 9 cred.)
 Vet. 3w, Comparative Physiology, 5 (Vet. 2)

Agron. 103w,s, Farm Management II: Operation, 3 (Agron. 102)
 Agron. 122w, Corn and Potato Crops, 3 (Agron. 1, bot. 9 cred.)
 An. Husb. 5w, Livestock-Breeding, 3 (Agron. 131)
 Dy. Husb. 103w, Dairy-Stock Feeding, 3 (Dy. Husb. 101, Agr. Biochem. 15)
 Econ. 117w,¹ Prices of Farm Products, 3 (sr. class or 13 cred. in Econ. and 5 cred. in soc. sciences)
 Farm Eng. 7w, Farm Structures, 3 (Farm Eng. 3)

Spring Quarter

Agron. 123s, Forage and Fiber Crops, 3 (Agron. 1, bot. 9 cred.)
 Dy. Husb. 104s, Advanced Study of Dairy Breeds, 3 (Dy. Husb. 101)
 Econ. 85f,s, Principles of Marketing, 3 (Econ. 6)
 Vet. 4s, Comparative Physiology, 3 (Vet. 3)
 Electives, 4

Agron. 11s, Farm Machinery, 3
 An. Husb. 105s, Swine Husbandry, 3 (An. Husb. 2, 3-4)
 Dy. Husb. 107s, Seminar III, 1 (3 courses in dy. husb.)
 Electives, 10

7. GENERAL COURSE IN FARM MANAGEMENT

Suggested for those who desire a broad training in agriculture in preparation for general farm management. This includes the subjects of the general course and suggested electives which add an emphasis upon those subjects which bear on technical farm management.

¹ Econ. 50s, Farm Finance, 3 (Econ. 3-4 or 5, 6) or Econ. 116f,w, Economics of Agricultural Production, 3 (see tabular statement) may be substituted for this course.

JUNIOR YEAR

Fall Quarter

Agr. Biochem. 15f, Principles of Animal Nutrition, 3 (Agr. Biochem. 7-8)
 Agron. 131f, Principles of Genetics, 3 (bot. 9 cred., an. biol. 9 cred.)
 An. Husb. 3f, Market Classes of Livestock, 3
 Econ. 85f,s, Principles of Marketing, 3 (Econ. 6)
 Hort. 6f, Fruit-Growing, 3 (May be omitted if completed as a part of the general requirements)
 Electives, 2 or 5

SENIOR YEAR

Agron. 102f,w, Farm Management II: Organization, 3 (Agron. 1, Econ. 6, An. Husb. 6 or 8, Soils 5)
 Agron. 121f, Cereal Crops, 3 (Agron. 1, bot. 9 cred.)
 Dy. Husb. 101f, Milk Production, 5 (Dy. Husb. 1)
 Pl. Path. 1f, Plant Pathology, 5 (bot. 9 cred.)
 Elective, 1

Winter Quarter

Agron. 122w, Corn and Potato Crops, 3 (Agron. 1, bot. 9 cred.)
 An. Husb. 4w, Market Classes of Livestock, 3 (An. Husb. 3)
 An. Husb. 5w, Livestock-Breeding, 3 (Agron. 131)
 Ent. 3f,w, Elementary Economic Entomology, 3 (an. biol. 9 cred.)
 Electives, 5

Agron. 103w,s, Farm Management II: Operation, 3 (Agron. 102)
 Econ. 108w, Marketing of Farm Products, 3 (Econ. 85)
 Econ. 117w,¹ Prices of Farm Products, 3 (sr. class, or 13 cred. in econ. and 5 cred. in soc. sciences)
 Farm Eng. 7w, Farm Structures, 3 (Farm Eng. 3)
 Sociol. 14f,w, Rural Sociology, 3 (sr. class)
 Electives, 2

Spring Quarter

Agron. 11s, Farm Machinery, 3
 Agron. 101s, Farm Management I, 3 (Agron. 1, Econ. 6)
 Agron. 123s, Forage and Fiber Crops, 3 (Agron. 1, bot. 9 cred.)
 An. Husb. 8s, Fundamentals of Feeding, 3 (Agr. Biochem. 15)
 Hort. 32s, Vegetable-Growing, 3 (May be omitted if completed as a part of the general requirements)
 Electives, 2 or 5

Agron. 104s, Farm Management III, 3 (Agron. 101, 102)
 Vet. 8s, Veterinary Studies, 5
 Electives, 9

8. FUR FARMING

The prices for furs during the past few years have stimulated greatly the interest in fur-bearing animals. Some fox farms and skunk farms have been established and other fur-bearing animals are being raised with a view to supplying furs for the trade. This has aroused frequent inquiry for a course that would fit students for such work either as a business or in connection with other farm enterprises. The college does not offer a special curriculum for students desiring to engage in fur farming but the important studies underlying such a course are already provided by the required work of the curriculum of the College of Agriculture, Forestry,

¹ Econ. 50s, Farm Finance, 3 (Econ. 3-4 or 5, 6) or Econ. 116f,w, Economics of Agricultural Production, 3 (see tabular statement) may be substituted for this course.

and Home Economics. Certain elective courses are also available which under faculty regulations may be so chosen as to meet the needs of students wishing to specialize in fur farming.

9. GENERAL COURSE IN HORTICULTURE

A general course with emphasis on horticulture; recommended for those who intend to enter practical farming of vegetable or fruit crops.

JUNIOR YEAR

Agr. Biochem. 15f, Principles of Animal Nutrition, 3 (Agr. Biochem. 7-8)
 Agron. 121f, Cereal Crops, 3 (Agron. 1, bot. 9 cred.)
 An. Husb. 3f, Market Classes of Livestock, 3
 Hort. 6f, Fruit-Growing, 3 (May be omitted if completed as a part of the general requirements)
 Hort. 109f, Principles of Genetics, 3 (bot. 9 cred., an. biol. 9 cred.)
 Hort. 111f, Systematic Pomology, 3 (Hort. 6)
 or
 Hort. 132f, Systematic Olericulture, 3 (Hort. 32)

SENIOR YEAR

Fall Quarter

Dy. Husb. 101f, Milk Production, 5 (Dy. Husb. 1)
 Hort. 93f, Judging Horticultural Crops, 2 (Hort. 6 or 32)
 Hort. 107f, Orchard Management, 3 (Hort. 6)
 or
 Hort. 131f, Advanced Vegetable Production, 3 (Hort. 32)
 Pl. Path. 1f, Plant Pathology, 5 (bot. 9 cred.)
 Sociol. 14f,w, Rural Sociology, 3 (sr. class.)

Winter Quarter

An. Husb. 4w, Market Classes of Livestock, 3 (An. Husb. 3)
 Ent. 3f,w, Elementary Economic Entomology, 3 (an. biol. 9 cred.)
 Hort. 21w, Small-Fruit Culture, 3 (Hort. 6 or 32, bot. 9 cred.)
 Hort. 56w,s, Plant Propagation and Nursery Practice, 3
 Electives, 5

Agron. 102f,w, Farm Management II: Organization, 3 (Agron. 1, Econ. 6, An. Husb. 6 or 8, Soils 5)
 An. Husb. 5w, Livestock-Breeding, 3 (Hort. 109)
 Econ. 117w,¹ Prices of Farm Products, 3 (sr. class or 13 cred. in econ. and 5 cred. in soc. sciences)
 Farm Eng. 7w, Farm Structures, 3 (Farm. Eng. 3)
 Hort. 135w, Potato Production, 3 (Hort. 6 or 32, bot. 9 cred.)
 Hort. 194w, Horticultural Seminar, 1 (Hort. 193)

Spring Quarter

Agron. 11s, Farm Machinery, 3
 Agron. 123s, Forage and Fiber Crops, 3 (Agron. 1, bot. 9 cred.)
 An. Husb. 8s, Fundamentals of Feeding, 3 (Agr. Biochem. 15)
 Econ. 85f,s, Principles of Marketing, 3 (Econ. 6)
 Hort. 32s, Vegetable-Growing, 3 (May be omitted if completed as a part of the general requirements)
 Electives, 2 or 5

Agron. 103w,s, Farm Management II: Operation, 3 (Agron. 102)
 Vet. 8s, Veterinary Studies, 5
 Electives, 8

¹ Econ. 50s, Farm Finance, 3 (Econ. 3-4 or 5, 6) or Econ. 116f,w, Economics of Agricultural Production, 3 (see tabular statement) may be substituted for this course.

SPECIAL COURSES IN AGRICULTURAL SCIENCES

Opportunity is offered to students who desire to specialize in the various branches of agriculture and agricultural sciences. In all cases it is assumed that such students will spend one or more years in graduate study. Only those students who have had high scholarship records in their undergraduate course and who have a clear understanding of the study to be pursued and who have a lasting and abiding enthusiasm for the chosen field of specialization should enter upon these courses. Since a comparatively small number of students will enter these special courses and since the specialization may vary considerably even in one field with the individual student, complete curricula are not suggested in all lines. The student is referred to the various divisions concerned and is advised to construct a curriculum in accordance with the open elective system. (Method A, page 21.) The student, however, would do well to include in his course as many of the subjects listed under the General Course in Agriculture as are consistent with his special course. The attention of the student is also called to the modern language requirements for graduate students. In many divisions French or German is required for the Master's degree and in all cases both French and German are required for a degree of Doctor of Philosophy. At least one modern language should be obtained during the undergraduate work.

Students in these courses may prepare themselves for teaching in colleges and universities, for research and experimental work in experiment stations, for regulatory, experimental, and extension service in the state and federal departments of agriculture and for various technical and industrial positions in agricultural industries and in the industries related to agriculture. For the opportunities offered the student is advised to consult with the various divisions and with the dean of the college.

Special courses are offered in the following fields:

I. AGRICULTURAL BIOCHEMISTRY

Positions open to graduates from an agricultural biochemistry course are:

- Control chemists in flour mills or the grain trade
- Control chemists in state department control laboratories
- Junior chemist, U. S. Department of Agriculture, Bureau of Chemistry
- Assistants or instructors in other colleges or universities
- Assistant chemist in agricultural experiment station
- Chemists or assistants in hospitals or medical laboratories
- Chemical positions with industrial corporations, especially those dealing with biological or agricultural products, etc.

Students specializing in Agricultural Biochemistry are expected to complete the following courses:

- Agr. Biochem. 15f, Principles of Animal Nutrition, 3 (Agr. Biochem. 7-8). Optional with Agr. Biochem. 108, 110
- Agr. Biochem. 101f-102w, Agricultural Quantitative Analysis, 6 (Agr. Biochem. 7-8)

- Agr. Biochem. 103f, Dairy Chemistry, 5 (Agr. Biochem. 7-8). Optional with Agr. Biochem. 108, 110
- Agr. Biochem. 108s, Chemistry of Wheat and Wheat Products, 3 (Agr. Biochem. 7-8). Optional with Agr. Biochem. 15, 103
- Agr. Biochem. 110s, Flour Laboratory Methods, 5 (Agr. Biochem. 101-102, or Chem. 131-132, parallel Agr. Biochem. 108.) Optional with Agr. Biochem. 15, 103.
- Agr. Biochem. 111f-112w, Phytochemistry, 6 (biol. 9 cred., organ. chem.)
- Agr. Biochem. 113f-114w, Biochemical Laboratory Methods, 4 (quant. anal., Agr. Biochem. 111-112 parallel)
- Agr. Biochem. 116f,w,s, Chemistry of "Vitamines" and Deficiency Diseases, 3 or 5 (Agr. Biochem. 111-112, 113, 114; or Physiol. 101-102; or Agr. Biochem. 7-8, 15)
or
- Agr. Biochem. 118f,w,s, Laboratory Problems in Biochemistry, 3 or 5 (Agr. Biochem. 111-112, 113-114, or 103 or 110)
- Chem. 35f-36w, Organic Chemistry, 10 (chem. 15 cred.)
- Ger. 1f,w,s, Beginning German A, 5
- Ger. 2f,w,s, Beginning German B, 5 (Ger. 1 or 1 yr. prep. Ger.)
- Phys. 1f,w,s, Elements of Mechanics and Sound, 3 (trigonometry)
- Phys. 2f,w,s, Elements of Mechanics Laboratory, 1 (Phys. 1 or parallel)
- Phys. 21f,w, Heat, 3 (Phys. 1)
- Phys. 22f,w, Heat Laboratory, 1 (Phys. 2, 21, or parallel)
- Phys. 41w,s, Magnetism and Electricity, 3 (Phys. 1)
- Phys. 42w,s, Magnetism and Electricity Laboratory, 1 (Phys. 2, 41, or parallel)

At least 10 credits should be selected from the following courses, all of which are highly desirable:

- An. Biol. 17f-18w, General Physiology, 10 (14 cred. in an. biol., or 9 cred. in an. biol. and 10 cred. in chem. or phys.)
- Bot. 52f, Plant Physiology, 5 (bot. 14 cred.)
- Chem. 140f-141w-142s, Physical Chemistry, 9, 12, or 15 (2 yrs. chem., 1 yr. phys.)
- Math. 30f,w,s, Analytical Geometry, 5 (Math. 6, 7)
- Math. 50f,w,s, Calculus I, 5 (Math. 30)
- Math. 51w,s, Calculus II, 5 (Math. 50)
- Physiol. 100f-101w, Physiologic Chemistry, 12 (org. chem., phys., an. biol.)
- Pl. Path. 1f, Plant Pathology, 5 (bot. 9 cred.)
- Soils 101f, Chemical Analysis of Soils, 3-5 (quant. anal., Soils 5)

2. AGRICULTURAL ECONOMICS

Those students who plan to specialize in agricultural economics are advised to include the following subjects in their course of study, and to consult with the Division of Agricultural Economics in regard to the remaining subjects. Substitution will be made to suit the needs of each student.

- Agron. 102f,w, Farm Management II: Organization, 3 (Agron. 1, Econ. 6, An. Husb. 6 or 8, Soils 5)
- Agron. 103w,s, Farm Management II: Operation, 3 (Agron. 102)
- Econ. 13f, Agricultural Statistics, 5 (Econ. 5)
- Econ. 28s, Principles of Accounting, 5 (Econ. 5)
- Econ. 50s, Farm Finance, 3 (Econ. 6)
- Econ. 85f,s, Principles of Marketing, 3 (Econ. 6)
- Econ. 106w, Land Economics, 3 (sr. class. or 13 cred. in econ. and farm mgt., and 5 cred. in other soc. sciences)
- Econ. 108w, Marketing of Farm Products, 3 (Econ. 85)
- Econ. 116w, Economics of Agricultural Production, 3 (same prereq. as Econ. 106)
- Econ. 117w, Prices of Farm Products, 3 (same prereq. as Econ. 106)
- Econ. 126f, Principles of Cooperation, 3 (Econ. 85 or same prereq. as Econ. 106)

COURSES IN AGRICULTURE

3. AGRICULTURAL EDUCATION

Consult Division of Agricultural Education for outline of course of study.

4. AGRONOMY AND FARM MANAGEMENT

Consult Division of Agronomy and Farm Management for outline of course of study.

5. ANIMAL HUSBANDRY

The general course listed on page 25 is also designed as a preparation for special advanced study.

6. DAIRY HUSBANDRY

The following is suggested for those students who intend to specialize in dairy husbandry. Those preparing for college, experiment station, or government positions are advised to elect one foreign language.

Agr. Biochem. 15f, Principles of Animal Nutrition, 3 (Agr. Biochem. 7-8)
 Agr. Biochem. 103w, Dairy Chemistry, 5 (Agr. Biochem. 7-8)
 Agron. 122w, Corn and Potato Crops, 3 (Agron. 1, bot. 9 cred.)
 Agron. 131f, Principles of Genetics, 3 (bot. 9 cred., an. biol. 9 cred.)
 An. Husb. 3f-4w, Market Classes of Livestock, 6
 An. Husb. 5w, Livestock-Breeding, 3 (Agron. 131)
 An. Husb. 6w, Livestock-Feeding, 5 (Agr. Biochem. 15)
 An. Husb. 105s, Swine Husbandry, 3 (An. Husb. 2, 3-4)
 Dy. Husb. 2w, Dairy Bacteriology, 5 (Bact. 1)
 Dy. Husb. 3f, Dairy Products, 5 (Dy. Husb. 1, 2)
 Dy. Husb. 101f, Milk Production, 5 (Dy. Husb. 1)
 Dy. Husb. 102s, Market Milk, 3 (Dy. Husb. 1, 2)
 Dy. Husb. 103w, Dairy-Stock Feeding, 3 (Dy. Husb. 101, Agr. Biochem. 15)
 Dy. Husb. 104s, Advanced Study of Dairy Breeds, 3 (Dy. Husb. 101)
 Dy. Husb. 105f, Seminar I, 1 (3 courses in dy. husb.)
 Dy. Husb. 106w, Seminar II, 1 (3 courses in dy. husb.)
 Dy. Husb. 107s, Seminar III, 1 (3 courses in dy. husb.)
 Econ. 85f,s, Principles of Marketing, 3 (Econ. 6)
 Ent. 3f,w, Elementary Economic Entomology, 3 (an. biol. 9 cred.)
 Pl. Path. 1f, Plant Pathology, 5 (bot. 9 cred.)
 Vet. 2f, Anatomy of Domestic Animals, 5
 Vet. 3f-4w, Comparative Physiology, 6 (Vet. 2)

7. ENTOMOLOGY AND ECONOMIC ZOOLOGY

Consult the Division of Entomology and Economic Zoology for outline of course of study.

8. HORTICULTURE

Consult the Division of Horticulture for outline of course of study.

9. PLANT PATHOLOGY AND BOTANY

Consult the Division of Plant Pathology and Botany for outline of course of study.

10. SOILS

Students are expected to complete the courses listed below and for the remaining courses should consult with the division.

- Chem. 20w-21s, Quantitative Analysis, 10 (Chem. 12-13)
- Chem. 35f-36w, Organic Chemistry, 10 (15 cred. in chem.)
- Geol. 1f,w,s-2w,s, General Geology, 10 (chem. 10 cred.)
- Geol. 21w-22s, Essentials of Mineralogy, 6 (chem. 10 cred.)
- Math. 30f,w,s, Analytical Geometry, 5 (Math. 6, 7)
- Math. 50f,w,s, Calculus I, 5 (Math. 30)
- Math. 51w,s, Calculus II, 5 (Math. 50)
- Phys. 1f,w,s, Elements of Mechanics and Sound, 3 (trigonometry)
- Phys. 2f,w,s, Elements of Mechanics Laboratory, 1 (Phys. 1 or parallel)
- Phys. 21f,w, Heat, 3 (Phys. 1)
- Phys. 22f,w, Heat Laboratory, 1 (Phys. 2, 21, or parallel)
- Phys. 41w,s, Magnetism and Electricity, 3 (Phys. 1)
- Phys. 42w,s, Magnetism and Electricity Laboratory, 1 (Phys. 2, 41, or parallel)

11. VETERINARY MEDICINE

Consult the Division of Veterinary Medicine for outline of course of study.

AGRICULTURE-BUSINESS COURSE

This course offers an opportunity for those who wish to prepare specifically for some branch of agricultural business, such as the marketing of farm products, farm finance, farm implements, farm real estate, country merchandising, and the like. The first two years are practically prescribed and include introductory courses in agriculture, economics, and the fundamental sciences necessary for further work in agriculture. During the freshman and sophomore years, students will register in the College of Agriculture, Forestry, and Home Economics. The junior and senior years are offered in the School of Business. Approximately half of the last two years is elective and may include advanced courses in agriculture and economics.

FRESHMAN AND SOPHOMORE YEARS

The outline for these years is the same as the Course in Agriculture (see pages 19 to 20) except that the following courses are omitted:

- Agr. Biochemistry 7-8, General Agricultural Biochemistry, 10
- Bact. 1, Elementary Bacteriology, 5
- Farm Eng. 3, Mechanical Drawing, 2
- Farm Eng. 11, Applied Mathematics, 5
- Farm Eng. 23, General Physics, 5
- Rhet. 11, Argumentation, 3; or Rhet. 31, English Literature I, 5
- Rhet. 22, Public Speaking, 3
- Soils 4, Soils, 3
- Soils 5, Soil Fertility, 3

The following courses are added:

- Econ. 20f, Economic Geography of Agriculture, 5 (must be taken in the freshman year)
- Econ. 21w, Economic History of Agriculture, 5 (must be taken in the freshman year)
- Econ. 25f-26w, Principles of Accounting, 8 (not open to freshmen)

Econ. 3s, Agricultural Statistics, 5 (Econ. 3-4, or 5. Not open to freshmen)

Electives sufficient to make a total of 102 credit hours, to be selected from the courses omitted from the first two years of the Agriculture Course.

JUNIOR AND SENIOR YEARS

The courses dealing with agricultural business which are offered by the School of Business and the College of Agriculture, Forestry, and Home Economics during the last two years are arranged by the School of Business into two lines of specialization: (1) General Course in Agricultural Business, and (2) Course in Marketing of Farm Products. Outlines of these courses of study appear below.

I. GENERAL COURSE IN AGRICULTURAL BUSINESS

JUNIOR YEAR

SENIOR YEAR

Fall Quarter

Econ. 51f, Business Law, 3 (10 cred. in econ.)	Econ. 112f, Business Statistics, 3 (Econ. 13 or 14)
Econ. 85f,s, Principles of Marketing, 3 (Econ. 3-4 or 5, 6)	Econ. 116f,w, Economics of Agricultural Production, 3 (see tabular statement)
Econ. 143f, Money and Banking, 4, (Econ. 3-4 or 5, 6)	Econ. 126f, Principles of Coöperation, 3 (Econ. 85)

Winter Quarter

Agron. 102f,w, Farm Management II: Organization, 3 (Agron. 1, Econ. 6, An. Husb. 6 or 8, Soils 5)	Econ. 106w,s, Land Economics, 3 (see tabular statement)
Econ. 52w, Business Law, 3 (Econ. 51)	Econ. 117w, Prices of Farm Products, 3 (see tabular statement)
Econ. 73w, Railway Traffic and Rates, 3 (Econ. 3-4 or 5, 6)	
Econ. 144w, Money and Banking, 4 (Econ. 143)	

Spring Quarter

Agron. 103w,s, Farm Management II: Operation, 3 (Agron. 102)	Econ. 107s, Land Tenure, 3 (Econ. 106)
Econ. 50s, Farm Finance, 3 (Econ. 3-4 or 5, 6)	Econ. 182s, Senior Seminar in Economics, 3 (see tabular statement)
Econ. 53s, Business Law, 3 (Econ. 52)	

RECOMMENDED ELECTIVES

Advanced courses in technical agriculture dealing with special products.

- Econ. 54s, Corporation Finance, 3 (Econ. 143-144)
- Econ. 72f, Economics of Transportation, 3 (Econ. 3-4, 5, 6)
- Econ. 88w, Advertising and Selling, 3 (Econ. 85)
- Econ. 90s, Economics of Consumption, 3 (Econ. 3-4 or 5, 6)
- Econ. 103f-104w, Value and Distribution, 6 (Econ. 3-4 or 5, 6)
- Econ. 149s, Business Cycles, 3 (Econ. 143-144)
- Econ. 176f, Commercial Policies, 3 (Econ. 3-4 or 5, 6)
- Econ. 177w, Foreign Trade, 3 (Econ. 176)
- Econ. 191f-192w, Public Finance, 6 (Econ. 3-4 or 5, 6)

2. MARKETING OF FARM PRODUCTS

JUNIOR YEAR

SENIOR YEAR

Fall Quarter

Econ. 51f, Business Law, 3 (10 cred. in econ.)
 Econ. 85f,s, Principles of Marketing, 3 (Econ. 3-4 or 5, 6)
 Econ. 143f, Money and Banking, 4, (Econ. 3-4 or 5, 6)

Econ. 111f, Practice Course in Marketing, 2 (Econ. 110)
 Econ. 112f, Business Statistics, 3 (Econ. 13 or 14)
 Econ. 126f, Principles of Coöperation, 3 (Econ. 85)

Winter Quarter

Econ. 52w, Business Law, 3 (Econ. 51)
 Econ. 73w, Railway Traffic and Rates, 3 (Econ. 3-4 or 5, 6)
 Econ. 88w, Advertising and Selling, 3 (Econ. 85)
 Econ. 144w, Money and Banking, 4 (Econ. 143)

Econ. 108w, Marketing of Farm Products, 3 (Econ. 85)
 Econ. 117w, Prices of Farm Products, 3 (see tabular statement)
 Econ. 127w, Marketing Organization and Management, 3 (Econ. 85, 25-26 or 28)

Spring Quarter

Econ. 53s, Business Law, 3 (Econ. 52)
 Econ. 90s, Economics of Consumption, 3 (Econ. 3-4 or 5, 6)
 Econ. 110s, Practice Course in Marketing, 1 (Econ. 85)

Econ. 128s, Marketing Organization and Management, 3 (Econ. 127)

RECOMMENDED ELECTIVES

Advanced courses in technical agriculture dealing with special products.

Econ. 50s, Farm Finance, 3 (Econ. 3-4 or 5, 6)
 Econ. 54s, Corporation Finance, 3 (Econ. 143-144)
 Econ. 72f, Economics of Transportation, 3 (Econ. 3-4 or 5, 6)
 Econ. 106w,s, Land Economics, 3 (see tabular statement)
 Econ. 107s, Land Tenure, 3 (Econ. 106)
 Econ. 116f,w, Economics of Agricultural Production, 3 (see tabular statement)
 Econ. 145s, International Exchange, 3 (Econ. 143-144)
 Econ. 176f, Commercial Policies, 3 (Econ. 3-4 or 5, 6)
 Econ. 177w, Foreign Trade, 3 (Econ. 176)

DESCRIPTION OF COURSES

AGRICULTURAL BIOCHEMISTRY

Professors ROSS A. GORTNER, CLYDE H. BAILEY; Associate Professors R. ADAMS DUTCHER, LEROY S. PALMER; Assistant Professors CORNELIA KENNEDY, CLARENCE A. MORROW, JOHN J. WILLAMAN; Instructors ARTHUR K. ANDERSON, PAUL F. SHARP.

General statement.—This division offers two types of work, namely, courses in those phases of chemistry which have special application in agriculture or home economics for students whose major work is in other divisions; and courses designed to train chemists for research or instruction in the special field of agricultural biochemistry.

COURSES

2. QUANTITATIVE METHODS. A brief course in the principles of quantitative analysis, including a study of stoichiometric problems, practice in the use of the balance and in typical gravimetric and volumetric manipulations. MR. WILLAMAN.
3. TYPES OF CARBON COMPOUNDS. An elementary study of the different groups of carbon compounds, with special reference to their relationships and their occurrence in plant and animal materials used as food. MR. ANDERSON.
- 7-8. GENERAL AGRICULTURAL BIOCHEMISTRY. A lecture and laboratory course involving a qualitative and quantitative study of the types of organic and inorganic compounds found in plants and animals and of the chemical changes involved in metabolism, growth, and maintenance. MR. DUTCHER, MR. ANDERSON.
15. PRINCIPLES OF ANIMAL NUTRITION. Lectures, recitations, and collateral reading emphasizing the chemical and physiological principles underlying digestion, metabolism, utilization of feeds, maintenance, growth, fattening, milk production, vitamine hypothesis, and deficiency diseases. MR. DUTCHER.
- 101-102. AGRICULTURAL QUANTITATIVE ANALYSIS. The estimation of inorganic and organic constituents of biological products, the proximate analysis of foods and feeding stuffs, the use of the polariscope, immersion refractometer, colorimeter and nephelometer, viscosimeter, and other special apparatus. MR. MORROW.
103. DAIRY CHEMISTRY. Lectures and laboratory work on the physical, colloidal, and chemical properties of milk and dairy products, the chemistry of the various constituents of milk and of the processes involved in the manufacture of dairy products. MR. PALMER.

106. **CHEMICAL TECHNOLOGY OF AGRICULTURAL PRODUCTS.** The composition of the principal products and by-products of agriculture and their utilization as raw material in various industries, and the methods of chemical control work in these industries. MR. BAILEY.
108. **CHEMISTRY OF WHEAT AND WHEAT PRODUCTS.** A lecture course, with collateral library reference work, on the chemical technology of the production and milling of wheat and the conversion of its products into human food. MR. BAILEY.
110. **FLOUR LABORATORY METHODS.** A laboratory course in methods of analysis of wheat and its products; milling tests of wheat, baking and special tests of flour. Designed to train students for research and control work in the cereal industry. MR. BAILEY.
- 111-112. **PHYTOCHEMISTRY.** Advanced course dealing with the colloidal state, and the chemistry of proteins, carbohydrates, glucosides, tannins, fats, plant acids, enzymes, and pigments and their physicochemical relations to the vital processes involved in growth and nutrition. MR. MORROW.
- 113-114. **BIOCHEMICAL LABORATORY METHODS.** A laboratory course paralleling the lectures in 111-112, using recent methods for the investigation of biologically important compounds, with especial reference to the detection and estimation of such compounds in cells or tissues. MR. MORROW, MR. SHARP.
116. **THE CHEMISTRY OF "VITAMINES" AND DEFICIENCY DISEASES.** Lectures, consultations, and library work on special nutritional problems accompanied by chemical and biological studies of food materials from the standpoint of their "vitamine" content. MR. DUTCHER, MISS KENNEDY.
118. **LABORATORY PROBLEMS IN BIOCHEMISTRY.** Special laboratory work in the preparation and isolation of pure compounds which occur in living cells, the study of biochemical reactions, and special methods of identification or determination of biochemical products. MR. GORTNER, MR. BAILEY, MR. DUTCHER, MR. PALMER, MR. MORROW, MR. WILLAMAN.

AGRICULTURAL ECONOMICS

See Economics (page 49).

AGRICULTURAL EDUCATION

COLLEGE OF EDUCATION

Professors ASHLEY V. STORM, DEXTER D. MAYNE; Assistant Professors WILLIAM P. DYER, ALBERT M. FIELD; Extension Specialists THEODORE A. ERICKSON, GEORGE F. HOWARD.

COURSES

11. **PRINCIPLES OF VOCATIONAL EDUCATION.** The fundamental principles upon which education is based. Emphasis is placed on those phases which are most closely related to vocational education. MR. DYER.
21. **VOCATIONAL EDUCATION.** A short history of vocational education; present status in Europe and the United States; manual training and home arts in an educational system; place of agriculture in the public schools with special reference to Minnesota. MR. MAYNE.
41. **APPRENTICE TEACHING.** An introductory course in teaching, including observation of class work, apprentice teaching, and special conference discussions of problems relating to teaching. Intended to initiate the student into the routine of classroom procedure. Professional readings. MR. DYER, MR. FIELD.
42. **TEACHING.** Preparation of lesson plans and actual teaching of classes under careful supervision in recitation and laboratory; criticism and discussion of plans, methods, and results of student teaching. Review and discussion of assigned professional readings. MR. DYER, MR. FIELD.
53. **CONSOLIDATED RURAL SCHOOLS.** To prepare principals to meet the problems of organization and management peculiar to consolidated rural schools, such as building arrangements, curriculum adjustments, transportation of pupils, and home project work. MR. DYER.
54. **RURAL EDUCATION AND COMMUNITY LIFE.** A study of the rural school as a community center, and ways and means of organizing educational and recreational activities, such as clubs, festivals, fairs, and other desirable features of rural community life. MR. DYER.
- 63-64-65. **GENERAL AGRICULTURE.** For students majoring in such fields of work as agricultural biochemistry, entomology, and economic zoology, plant pathology, and in other colleges. A series of units by division chiefs and other agricultural specialists. MR. STORM, MR. MAYNE.
75. **VISUAL PRESENTATION.** To prepare persons for presenting materials by means of slides, films, charts, etc. Students assist in assembling materials for their own use and in acquiring skill and technic in preparation and operation of various mediums. —————
81. **EXTENSION WORK.** Federal, state, and local extension aims, organization. Assembling and use of extension data and equipment. Development of extension methods especially as applied to the work of Minnesota. MR. STORM.
82. **AGRICULTURAL EXTENSION FIELD WORK.** Actual field practice in extension work on part salary in addition to credits. Number admitted to course limited by positions available. Usually will cover summer quarter, may extend into fall quarter. MR. STORM.

121. **TEACHERS' COURSE, HOME AND SCHOOL GARDENING.** A lecture and laboratory course designed to give teachers the preparation necessary for the proper planning, management, and supervision of home and school gardens. MR. FIELD.
131. **METHODS IN TEACHING HIGH-SCHOOL AGRICULTURE.** Fundamental elements of method in teaching as related to teaching agriculture in high school. Organizing subject-matter of daily work; selection and manipulation of devices. Classroom and laboratory method. Specific plans for teaching secondary agriculture. MR. FIELD.
151. **ORGANIZATION AND MANAGEMENT.** Organization and management of work in secondary schools, particularly of Minnesota, with special reference to agricultural work, courses of study, programs, equipment, laboratory and class management, extension work, plots, and coördination of work. MR. STORM, MR. DYER.
- 161-162-163. **FUNDAMENTALS OF AGRICULTURE.** Essential for principals and superintendents of schools in which agriculture is taught, and valuable for students of other colleges whose time for agriculture is limited. Agricultural college experts will give work in their special fields. MR. STORM.
164. **FUNDAMENTALS OF AGRICULTURE.** Basic principles of agricultural science and the fundamental elements of practical agriculture. Special emphasis on concrete problems in soils, crops, and animal husbandry, as related to classroom instruction and to school and home projects. MR. FIELD.
176. **ADVANCED VISUAL PRESENTATION.** Continuation of 75. Further work in design and construction of charts and lantern slides. Special study of motion-picture machines. Actual practice in effective use of visual aids in lecture and recitation. —————
181. **AGRICULTURAL STATISTICS AND GRAPHIC REPRESENTATION.** Course teaches application of statistical methods to agriculture and different means of representing agricultural statistics graphically. Of value to all students to enable them to interpret, present, and use agricultural statistics and graphic representations.
- 191-192-193. **SEMINAR IN AGRICULTURAL EDUCATION.** Critical studies of important problems in agricultural education; opportunity for individual investigation and research; review and interpretation of current educational literature. MR. STORM, MR. DYER, MR. FIELD.

AGRONOMY AND FARM MANAGEMENT

Professors ANDREW BOSS, HERBERT K. HAYES; Associate Professors ALBERT C. ARNY, LOUIS B. BASSETT; Assistant Professors LOUIS F. GAREY, FORREST W. MCGINNIS, GEORGE A. POND; Instructors FRED W. GRIFFEE, FREDERICK H. STEINMETZ; Extension Specialist WILLIAM L. CAVERT.

COURSES

- I. FARM CROPS. An elementary study of the important field crops of the United States with emphasis upon those of local importance; distribution, economic importance, agricultural classification, cultural methods, and principles of improvement. MR. MCGINNIS, MR. STEINMETZ.
- II. FARM MACHINERY. Lectures and laboratory work covering classification, mechanical construction, adjustment, and operation of the different kinds of farm machinery. MR. BASSETT.
101. FARM MANAGEMENT I. Farm records—a study of simple farm accounting and of the forms and methods employed in making cost of production studies and farm-management surveys. Practice given in the art of record-keeping and accounting. MR. POND.
102. FARM MANAGEMENT II: ORGANIZATION. A course in which the business side of farming is emphasized. Special attention is given to farm organization and equipment. MR. BOSS, MR. GAREY.
103. FARM MANAGEMENT II: OPERATION. Continuation of 102. Special attention is given to farm operation. MR. BOSS, MR. GAREY.
104. FARM MANAGEMENT III. An advanced seminar course, including cost of production studies, farm business analyses, and farm practices. MR. BOSS.
121. CEREAL CROPS. An advanced study of the cereal crops. Structure, group classification, improvement, growing, and utilization. Brief score-card practice and a limited amount of placing on intrinsic value included. MR. ARNY, MR. MCGINNIS.
122. CORN AND POTATO CROPS. A study of the corn and potato crops similar to that outlined for Course 121. MR. ARNY, MR. MCGINNIS.
123. FORAGE AND FIBER CROPS. A study of forage plants through assigned reading, laboratory and field work. Following the study of each crop some attention is given to score-card practice and comparative placing of representative samples. MR. ARNY, MR. MCGINNIS.
131. PRINCIPLES OF GENETICS. Lectures and laboratory work designed to familiarize the student with the underlying principles of breeding. Heredity, variation, biometry, and evolution are emphasized. Same as Hort. 109. MR. HAYES, MR. DORSEY.
132. FARM CROPS PLANT-BREEDING. Applied genetics is emphasized. Methods of breeding each of the important agricultural crops with special attention to experiment-station investigations and to the methods used by plant breeders. MR. HAYES, MR. GRIFFEE.

ANIMAL BIOLOGY

COLLEGE OF SCIENCE, LITERATURE, AND THE ARTS

Professors HENRY F. NACHTRIEB, HAL DOWNEY, WILLIAM A. RILEY, THOMAS S. ROBERTS, CHARLES P. SIGERFOOS; Associate Professor ELMER J. LUND; Assistant Professors ROYAL N. CHAPMAN, OSCAR W. OESTLUND; Instructor ADOLPH RINGOEN.

General statement.—Courses in* this department are closely correlated with those offered by the Division of Entomology and Economic Zoology of the College of Agriculture, Forestry, and Home Economics. For courses of that division, see page 54.

- 1-2. GENERAL ZOOLOGY. A survey of the animal kingdom, emphasizing the principles of development and structure in relation to functions and habit, heredity and evolution, and the animals of economic importance. Lectures, quizzes, and laboratory. MR. NACHTRIEB, MR. SIGERFOOS, MR. LUND, MR. RINGOEN.
- 9-10. HISTOLOGY. A comparative microscopic study of the origin and structure of the tissues of vertebrates and invertebrates, and of the organs of mammals. Textbook, lectures, and laboratory. MR. DOWNEY.
11. CYTOLOGY AND TECHNIC. The structure and properties of the animal cell and the elements of microscopical technic. Lectures, reference and laboratory work. —————
- 14-15-16. GENERAL ZOOLOGY. Same as Course 1-2 extended throughout three quarters. MR. SIGERFOOS, MR. RILEY.
- 17-18. GENERAL PHYSIOLOGY. Physical and chemical properties of living protoplasm and cells. Various organisms are selected which show the nature of physiological processes and introduce the student to quantitative experimental methods in biology. Laboratory, lectures, and reading. MR. LUND.
23. PRINCIPLES OF ANIMAL BEHAVIOR. Comparative physiology of the nervous system, sense organs, and reactions in lower animals. Laboratory, lectures, and reading. MR. LUND.
- 37-38-39. GENERAL ENTOMOLOGY. Elements of entomology leading up to discussion of the principles of taxonomy and their application to the classification of insects. MR. OESTLUND.
43. INTRODUCTORY ENTOMOLOGY. The structure, development, and classification of insects. An introductory course in entomology and preparatory for courses in economic entomology. MR. OESTLUND.
44. ANIMAL PARASITES AND PARASITISM. Lectures and laboratory work. A consideration of the origin and biological significance of parasitism, and the structure, life history, and economic relations of representative parasites. Methods of control and prevention will be emphasized. MR. RILEY.

- 46-47. ORNITHOLOGY. Structure, classification, and habits of birds with special reference to the birds of Minnesota. Considerable time devoted to field study. Bird or field glass and handbook required. Laboratory, lectures, and quizzes. Class limited to ten. MR. ROBERTS.
48. GENERAL ECOLOGY. A general course covering the relationships of animals, animal societies, and faunas to the inorganic and organic factors of the environment. The course consists of lectures, assigned reading, recitations, laboratory and field work. MR. CHAPMAN.
107. PROTOZOOLOGY. Lectures, reference and laboratory work on the structure and life histories of Protozoa, with special reference to the relation of the Protozoa to diseases of animals. MR. SIGERFOOS.
- 109-110. GENERAL PHYSIOLOGY. A thoro survey of fundamental physiological processes in organisms. Based on Bayliss's *Principles of General Physiology*. Laboratory, lectures, and reading. MR. LUND.
- 117-118-119. ECOLOGY OF INSECTS. General principles of ecology with special reference to the insects of Minnesota. Lectures, laboratory, assigned reading, and field work. MR. CHAPMAN.
124. ADVANCED ECOLOGY. Similar to 117-118-119 with special field work. MR. CHAPMAN.
- 125-126-127. ADVANCED ENTOMOLOGY. Advanced work in the lines of morphology and classification of insects, with lectures on the history of entomology. MR. OESTLUND.
130. BIOLOGY AND TAXONOMY OF THE APHIDIDAE. Intensive study of the natural history, bibliography, and classification of the Aphididae. MR. OESTLUND.
- 139-140. HISTOLOGY AND DEVELOPMENT OF INSECTS. Lectures and laboratory work on the histology, embryonic and postembryonic development of insects. MR. RILEY.
- 144-145-146. ANIMAL PARASITES AND PARASITISM. Lectures and laboratory work. Origin and biological significance of parasitism, structure, life history, and economic relations of representative parasites. Second quarter devoted primarily to the relation of insects to diseases of man and animals. MR. RILEY.
- 181-182. EMBRYOLOGY. A survey of the principles of animal development and a detailed study of the development of the circulatory or urinogenital system of a vertebrate. Lectures, reference and laboratory work. MR. NACHTRIEB.
183. GENETICS AND EUGENICS. Facts and theories of heredity and the application of the laws governing natural inheritances for the improvement of the race. Lectures, references, quizzes, and demonstrations. MR. NACHTRIEB.

ANIMAL HUSBANDRY

ANIMAL INDUSTRY GROUP

Professors WALTER H. PETERS, EVAN F. FERRIN; Assistant Professors PHILIP A. ANDERSON, NORRIS K. CARNES; Instructors ALFRED L. HARVEY, MARK A. MCCARTY.

COURSES

1. TYPES AND BREEDS OF LIVESTOCK. The types as related to performance or production in horses, beef cattle, sheep, and swine, and the origin, history, characteristics, and economic importance of the breeds, classified according to type. MR. CARNES.
2. LIVESTOCK-JUDGING. Practice in judging horses, cattle, sheep, and hogs from both the type and the breed standpoint. MR. ANDERSON.
- 3-4. MARKET CLASSES OF LIVESTOCK. Livestock markets and marketing methods. The market classes of horses, cattle, sheep, and swine. Practice in classifying, judging, and appraising livestock. MR. FERRIN.
5. LIVESTOCK-BREEDING. The application of the principles of genetics to the breeding of livestock; a review of the master-breeders' methods and consideration of the practical breeders' problems. MR. PETERS.
6. LIVESTOCK-FEEDING. Feeding livestock under farm conditions; efficiency and economy in growing and fattening meat animals; feeding draft horses and colts. Consideration of experimental work and present practice. Practical feeding problems. Only three credits allowed to those who have completed Course 8. MR. FERRIN.
7. MEATS. General course in the dressing of animals and the cutting of carcasses. Lectures and laboratory work. MR. ANDERSON.
8. ELEMENTS OF FEEDING. A general course giving a brief survey of livestock and dairy feeding designed for students not majoring in animal industry. Not open to those who have completed Course 6 or Dy. Husb. 103. MR. HARVEY, MR. RAYBURN.
9. PEDIGREES AND HERD BOOKS. Pedigree registration; laboratory practice in the use of the stud, herd, and flock records; tracing and tabulating pedigrees. MR. FERRIN.
101. ADVANCED STOCK-JUDGING. Competitive judging of all types, breeds, and classes of livestock supplemented by visits to nearby stock farms. MR. FERRIN.
102. HORSE HUSBANDRY. Stud-farm management; the selection of foundation stock and the breeding, feeding, and marketing of horses. Horsepower; factors determining a horse's efficiency for work. MR. PETERS.

103. BEEF-CATTLE HUSBANDRY. The management of pure-blood and grade herds; selection of foundation stock, sales and shows, building equipment, labor. Practicums in fitting cattle for show and sale, animal photography, preparation of feeds, and the care of cattle. MR. CARNES.
104. SHEEP HUSBANDRY. The care and management of purebred sheep. Study of pedigrees, registrations, fitting for show purposes, marketing. Practicums in feeding, shearing, blocking, and caring for young lambs. MR. ANDERSON.
105. SWINE HUSBANDRY. Hog-farm equipment, purebred vs. market hogs; building a breeding herd, private herd records, herd management, fitting and showing, marketing breeding stock. Barn work and feeding practice. MR. FERRIN.
106. ADVANCED MEATS. Practice work in dressing animals and cutting carcasses giving particular attention to conformation as related to dressing percentage and the carcass; also a study of the physical and chemical composition of meat. MR. ANDERSON.
107. MEAT PROBLEMS. The wholesale cuts and grades of meat; the packing industry and the utilization of by-products. Special problems and trips to packing establishments. MR. ANDERSON.
108. SEMINAR. Special problems and review of investigations pertaining to the livestock industry. MR. PETERS.

BACTERIOLOGY AND IMMUNOLOGY

MEDICAL SCHOOL

Professor WINFORD P. LARSON; Associate Professor ARTHUR T. HENRICI;
Instructors ANNE G. BENTON, DAVID O. SPRIESTERSBACH; Assistant
ROBERT G. GREEN.

COURSES

- I. GENERAL BACTERIOLOGY. Lecture and laboratory course. The principles and technic of general bacteriology. Studies in the morphologic and biologic characters of the common bacteria. Preparation of culture media. Disinfectants and disinfection. Bacteriology of water and food products. DR. LARSON, MISS BENTON, MR. SPRIESTERSBACH, MR. GREEN.
103. SPECIAL BACTERIOLOGY FOR STUDENTS OF AGRICULTURE. Bacteriology of the soil in relation to fertility; the nitrogen-fixing bacteria of legumes; bacteria that cause plant diseases; bacterial diseases of domestic animals; the bacteriology of milk and dairying. DR. HENRICI.

BEE CULTURE

Professor FRANCIS JAGER; Assistant Professor GROVER C. MATTHEWS.

General statement.—Theoretical and practical instruction on bees,

honey, and wax production. At least one year of botany should be completed before electing these courses. General zoology and entomology are also desirable. If not already completed they should be taken at same time as the courses in bee culture.

COURSES

1. ELEMENTS OF BEEKEEPING I. Development, life history, functions of the queen, worker, and drone. Habits and instincts. Handling and manipulation. Races of bees. Diseases and enemies. Tools and appliances. Honey sources. Arrangement of the apiary and equipment for beginner. MR. JAGER, MR. MATTHEWS.
2. ELEMENTS OF BEEKEEPING II. Life of the colony. Fundamentals of colony behavior throughout the cycle of the year. Fundamentals of beekeeping practice throughout the cycle of the year. Production of comb and extracted honey. Indoor and outdoor wintering. MR. JAGER, MR. MATTHEWS.
3. ADVANCED BEEKEEPING I. Practical anatomy. Psychology, instinct, and reflex action. Architecture of the honey comb. Pollen and honey chemistry. Pollenization and honey flora. Diagnosis and treatment of bee diseases. Influence of soil and climatic conditions upon honey secretions. MR. JAGER.
4. ADVANCED BEEKEEPING II. Professional beekeeping. Location and management of home and out-apiaries. Migratory beekeeping. Transportation methods for commercial beekeeping. Central honey plants. Construction and equipment of bee houses, cellars, workshops. Power and up-to-date machinery. Organization. MR. JAGER.
5. QUEEN-RAISING. Queen-judging, principles of reproduction, grafting, drone-raising, mating. Nuclei, mailing, introducing, re-queening. In connection with the University Farm queen-bee raising station. MR. JAGER.

BOTANY

COLLEGE OF SCIENCE, LITERATURE, AND THE ARTS

Professors C. OTTO ROSENDAHL, ELIAS J. DURAND, LEE I. KNIGHT, JOSEPHINE E. TILDEN; Associate Professor FREDERIC K. BUTTERS; Assistant Professors WILLIAM S. COOPER, RODNEY B. HARVEY, NED L. HUFF; Instructor ARTHUR M. JOHNSON.

COURSES

- 1-2. GENERAL BOTANY. Fundamental principles of botany. Survey of organs of the flowering plant; its internal structure and physiology. Representatives of the algae, fungi, liverworts, etc., examined with special reference to tracing evolution of the vegetable kingdom. MR. DURAND, MR. BUTTERS, MR. HUFF, MR. JOHNSON.

- 4-5-6. GENERAL BOTANY. Same as Course 1-2, extended throughout three quarters. For students in agriculture and forestry only. MR. DURAND.
7. TAXONOMY OF FLOWERING PLANTS. A general study of the classification and relationships of flowering plants. Laboratory and field practice in the determination of species, together with lectures and quizzes. MR. ROSENDAHL, MR. JOHNSON.
11. GENERAL MORPHOLOGY OF ALGAE AND FUNGI. A general survey of the structure, evolution, and classification of the algae and fungi. Lecture, laboratory, and field work. MISS TILDEN.
15. ANATOMY OF VASCULAR PLANTS. A study of the microscopic structure of vascular plants, the cell, tissues, and tissue systems with particular attention to the development and evolution of the vascular system in the root, stem, and leaf. MR. BUTTERS.
51. HISTOLOGICAL METHODS. Training in methods used in the preparation and preservation of class material. Special attention is given to methods of killing, imbedding, sectioning, staining, and mounting. MR. DURAND.
52. PLANT PHYSIOLOGY. An introductory course giving a general survey of plant functions. MR. KNIGHT.
53. BOTANY OF ECONOMIC PLANTS. A survey course treating the most important botanical features of the common plants. MR. KNIGHT.
54. ELEMENTARY ECOLOGY. An introduction to the study of plants and their environment; investigation of the habitat; its effects upon plants as individuals and in mass; plant communities; plant successions. Laboratory and field work, lectures, and discussion. MR. COOPER.
55. ALGAE. A study of freshwater forms based on collections made by the class. Lectures, laboratory, and field work. MISS TILDEN.
62. GENERAL MORPHOLOGY OF BRYOPHYTES AND PTERIDOPHYTES. A general survey of the structure, evolution, and classification of the liverworts, mosses, and ferns. MR. HUFF.
63. GENERAL MORPHOLOGY OF ANGIOSPERMS AND GYMNASPERMS. A general survey of the structure, evolution, and classification of seed plants. MR. BUTTERS.
107. MORPHOLOGY AND TAXONOMY OF THE BRYOPHYTES. A special study of the structure and classification of the liverworts, and mosses. MR. DURAND.
108. MORPHOLOGY AND TAXONOMY OF THE PTERIDOPHYTES. An intensive study of lycopods, ferns, and their allies, their structure and history, with special attention to the classification of living forms. Lectures, reference-reading, and laboratory work. MR. BUTTERS.

110. MORPHOLOGY AND TAXONOMY OF THE GYMNOSPERMS. An intensive study of cycads, conifers, and their allies, their structure and history, with special attention to the classification of living forms. Lectures, reference-reading, and laboratory work. MR. BUTTERS.
- 113-114-115. ADVANCED TAXONOMY. An advanced course in which special attention is given to the taxonomy of difficult natural groups, involving systematic principles and practice, rules of nomenclature, systems of classification, etc. MR. ROSENDAHL.
- 118-119. CYTOLOGY. A survey of cell structure and the various phenomena of division, fusion, and metamorphosis, together with a review of the history of cytological investigation. Methods of cytological research indicated in the laboratory. MR. ROSENDAHL.
131. FIELD ECOLOGY. A careful study of the local plant communities and successions, followed by a written report, and by a study of the general principles of plant association and succession. MR. COOPER.
133. FOREST GEOGRAPHY OF NORTH AMERICA. Preliminary discussion of principles of plant distribution, followed by detailed study of the forest regions of North America; reading, discussion, lantern slides, distribution maps, microscopic work, written reports. MR. COOPER.
141. PHYSICAL PHASES OF PLANT PHYSIOLOGY. A course dealing with the intake of materials and their translocation, also the energy relations of the plant. MR. KNIGHT, MR. HARVEY.
142. PLANT METABOLISM. A course dealing with the synthesis of plant foods, its transformation and utilization by the plant. MR. KNIGHT, MR. HARVEY.
143. PLANT METABOLISM AND GROWTH. Continuation of 142, also introducing certain fundamental phases of growth. MR. KNIGHT, MR. HARVEY.
144. PLANT MICROCHEMISTRY. A study of the localization of materials of physiological importance in the plant and their relation to physiological processes. MR. HARVEY.

CHEMISTRY

THE SCHOOL OF CHEMISTRY

Professors WILLIAM H. HUNTER, CHARLES F. SIDENER; Associate Professors FRANK H. MACDOUGALL, M. CANNON SNEED; Assistant Professor ISAAC W. GEIGER; Instructor WALTER M. LAUER.

COURSES

- 1-2-3. GENERAL INORGANIC CHEMISTRY. Designed for those who have had no high-school chemistry. 1-2—A study of the general laws of chemistry and of the non-metals and their compounds. 3—A study of the metals and their compounds. MR. SNEED.

- 9-10. GENERAL INORGANIC CHEMISTRY. Designed for those who have had one year of high-school chemistry. 9—General laws of chemistry, the non-metals and their compounds. 10—Metals and their compounds and ionic equilibrium, considered quantitatively. MR. SNEED.
11. QUALITATIVE CHEMICAL ANALYSIS. Laboratory work in systematic qualitative analysis with lectures on solution, ionization, chemical and physical equilibrium, oxidation and reduction, and other subjects pertinent to qualitative analysis. MR. SNEED.
- 12-13. QUALITATIVE CHEMICAL ANALYSIS. Laboratory work in systematic qualitative analysis with lectures on solution, ionization, chemical and physical equilibrium, oxidation and reduction, and other subjects pertinent to qualitative analysis. MR. SNEED.
- 20-21. QUANTITATIVE ANALYSIS. An introductory course covering the general principles and methods of quantitative analysis, both gravimetric and volumetric. Typical problems will be assigned and attention given to proper laboratory practice. MR. SIDENER, MR. GEIGER.
- 35-36. ORGANIC CHEMISTRY. An introduction to the chemistry of carbon compounds. The laboratory work will include the preparation of characteristic substances. MR. HUNTER, MR. LAUER.
126. SANITARY WATER ANALYSIS. Lectures and laboratory practice in the chemical examination of potable waters. MR. SIDENER, MR. GEIGER.
- 140-141-142. PHYSICAL CHEMISTRY. A general survey of the subject. Laboratory work three or six hours per week. Nine, twelve, or fifteen credits, depending on amount of laboratory work. MR. MACDOUGALL.

DAIRY HUSBANDRY

ANIMAL INDUSTRY GROUP

Professors CLARENCE H. ECKLES, JOSEPH R. KEITHLEY; Professor Emeritus THEOPHILUS L. HAECKER; Assistant Professors HAROLD MACY, ALLAN B. RAYBURN; Instructors CHESTER D. DAHLE, THOR W. GULLICKSON; Assistants JOHN W. WILBUR, ELMER O. ANDERSON; Extension Specialists ARTHUR J. MCGUIRE, WILLIAM A. MCKERROW, LESLIE V. WILSON.

COURSES

1. ELEMENTS OF DAIRYING. Composition of milk. Causes of variation in composition; milk constituents and their uses in dairy manufactures and as food; Babcock test; sanitary handling of milk and cream on the farm; cream-separating and farm butter-making. MR. KEITHLEY, MR. DAHLE, MR. GULLICKSON, MR. ANDERSON, MR. WILBUR.
2. DAIRY BACTERIOLOGY. Lectures and laboratory exercises. Types of milk organisms; the contamination of milk and how prevented; relation of milk to the public health; the bacteriology of dairy products. MR. MACY.

3. DAIRY PRODUCTS. The manufacture of butter, cheese, and ice cream with special reference to the chemical and bacteriological processes involved. Laboratory exercises to illustrate these principles. Organization, construction, and equipment of factories; factory accounting. MR. KEITHLEY, MR. DAHLE.
4. CHEESE-FACTORY PRACTICE. A minimum of one month's experience in an approved practical cheese factory. Records are kept and reports made. MR. KEITHLEY.
5. CREAMERY PRACTICE. A minimum of one month's experience in an approved practical creamery. Records are kept and a report made. MR. KEITHLEY.
101. MILK PRODUCTION. Problems of the dairy farmer, such as characteristics and adaptations of dairy breeds; selection and management of dairy herd and sire; calf-raising; dairy barns. Laboratory: comparative judging and study of breed type. MR. ECKLES, MR. RAYBURN.
102. MARKET MILK. Lectures and laboratory work. Classes of market milk; transportation and marketing; sanitary inspection; equipment of plants; problems of public control. Standardization. Pasteurization. Accounting. Reconstitution. MR. KEITHLEY, MR. MACY.
103. DAIRY-STOCK FEEDING. Application of principles of nutrition to feeding the dairy cow and growing young animals. Feeding standards; characteristics of various feeding stuffs; formulation of rations. Only two credits allowed those who have completed An. Husb. 8. MR. ECKLES.
104. ADVANCED STUDY OF DAIRY BREEDS. Practice in comparative judging of dairy cattle representing different breeds and ages; selection and valuation of cattle according to type and pedigree; a study of important strains and families; visits to purebred herds. MR. RAYBURN.
105. SEMINAR I. Special investigation and study of selected topics. Each student presents papers and reports on assigned subjects and reviews recent scientific investigations along dairy husbandry lines. MR. ECKLES.
106. SEMINAR II. Continuation of 105, but 105 not a prerequisite. MR. ECKLES.
107. SEMINAR III. Continuation of 106, but 106 not a prerequisite. MR. ECKLES.

ECONOMICS

SCHOOL OF BUSINESS

Professors GEORGE W. DOWRIE, JOHN D. BLACK, ROY G. BLAKEY; Associate Professors FREDERICK B. GARVER, BRUCE D. MUDGETT; Assistant Professors ERNEST A. HEILMAN, CLARENCE L. HOLMES, HOWARD S. NOBLE, J. WARREN STEHMAN, HOLBROOK WORKING; Professorial Lecturer J. FRANKLIN EBERSOLE; Instructors HILDING E. ANDERSON, JOSEPH E. CUMMINGS, PAUL L. MILLER, VICTOR H. PELZ, VIRGIL R. WERTZ.

5. GENERAL ECONOMICS. The usual basic principles of economic science interpreted in terms of agriculture and forestry as well as of other industries. MR. HOLMES, MR. WORKING, MR. ANDERSON, MR. WERTZ.
6. AGRICULTURAL ECONOMICS. The special body of economic principles that have been developed for agricultural production, exchange, and distribution, together with the application of these principles to agricultural problems. MR. HOLMES, MR. WORKING, MR. WERTZ.
13. AGRICULTURAL STATISTICS. Statistical method applied to agricultural data. MR. BLACK.
20. ECONOMIC GEOGRAPHY OF AGRICULTURE. The localization of agricultural products, markets and systems of farming; economic and other forces determining this localization; considered in relation to industries in general. MR. HOLMES.
21. ECONOMIC HISTORY OF AGRICULTURE. The evolution of modern methods of agricultural production and marketing, types of farming and tenure systems.
- 25-26. PRINCIPLES OF ACCOUNTING. The purpose and principles of account classification; capital and revenue; accruals; valuation; depreciation; preparation and interpretation of balance sheets, income accounts, and other statements; introduction to partnership and corporation accounts. Laboratory course with supplementary lectures. MR. NOBLE.
28. PRINCIPLES OF ACCOUNTING. (For Agriculture, Forestry, and Home Economics students.) Principles of general and cost accounting presented in somewhat abridged form. MR. HEILMAN.
50. FARM FINANCE. The financial needs of typical farmers. Present facilities for supplying them; institutions, their organization and operation, interest rates, defects, and proposed remedies. The financing of the various farm organizations. The farmer as an investor. MR. DOWRIE.
72. ECONOMICS OF TRANSPORTATION. The theory and practice of rate-making. Government regulation, the conflict between state and federal authorities, and suggested improvements in control of transportation agencies. MR. CUMMINGS.
73. RAILWAY TRAFFIC AND RATES. Railway transportation from standpoint of business man and shipper. Freight-shipping documents. Classification and tariffs, time and preference freight, private car lines, industrial trackage and terminal service, express rates and service, special passenger rates. MR. CUMMINGS.
85. PRINCIPLES OF MARKETING. Analysis of market functions, marketing channels, and marketing agencies. MR. ANDERSON.

88. ADVERTISING AND SELLING. Marketing of manufactured products; selling methods and problems. MR. PELZ.
90. ECONOMICS OF CONSUMPTION. Nature of human wants; standards of living; cost of living; income, administration of income; nature of demand; demand and price; relation of consumption to the population problem. MR. GARVER.
91. PRINCIPLES OF ORGANIZATION AND MANAGEMENT. Types of operating organization; specialization; coördination of men and departments; delegation of authority; establishment and maintenance of standards for materials, operations, machinery; determination of business policies; personnel problems. MR. PELZ.
- 103-104. VALUE AND DISTRIBUTION. An advanced course in economic theory devoted chiefly to the study of recent theories of wages, interest, rent, and profits. Assigned readings and reports on current problems in distribution. MR. GARVER.
106. LAND ECONOMICS. Land as a factor of production; urban land utilization; rents and land values; land classification; land exchange. MR. BLÁCK.
107. LAND TENURE. Property in land; tenancy; farm labor; evolution of the tenure classes. MR. BLACK.
108. MARKETING OF FARM PRODUCTS. Studies of the problems and methods of marketing selected farm products with special reference to the Twin City markets. MR. BLACK.
- 110-111. PRACTICE COURSE IN MARKETING. Eight to twelve weeks of experience as an employee in central or local markets. Careful study and observation of methods. Written plans and reports. MR. BLACK, MR. ANDERSON.
112. BUSINESS STATISTICS. The use of statistics in the analysis of the internal operations of a business and of external business conditions. MR. MUDGETT.
116. ECONOMICS OF AGRICULTURAL PRODUCTION. Detailed analysis of the economic principles underlying agricultural production; economic characteristics and functions of the factors of production; proper combinations of factors; selection of enterprises. MR. HOLMES.
117. PRICES OF FARM PRODUCTS. Price determination in the various markets for various classes of farm products; analysis of forces determining prices. MR. WORKING.
126. PRINCIPLES OF COÖPERATION. The coöperative mode of economic functioning as compared with the competitive and governmental, as to motivation, organization, and public control; applied to agricultural marketing, finance, production, and consumption. MR. BLACK, MR. MILLER.

- 127-128. **MARKETING ORGANIZATION AND MANAGEMENT.** Principles of accounting and business organization applied to the organization and management of proprietary and coöperative marketing business units.
131. **COST ACCOUNTING.** General principles of cost accounting; elements of cost; methods of arriving at costs and distribution of overhead; application of cost accounting principles to selling, banking, mining, farming, etc. MR. NOBLE.
- 143-144. **MONEY AND BANKING.** Relation to industrial system. Monetary principles with special reference to United States. American banking and bank organization, principles of commercial banking, non-commercial banking, relation of government to banking, comparative study of leading foreign systems. MR. DOWRIE, MR. STEHMAN, MR. EBERSOLE.
145. **INTERNATIONAL EXCHANGE.** Theory of international exchange, pars of exchange with gold, silver, and paper standard countries; the rates of exchange; financing imports and exports; bankers' bills; futures, arbitrage; specie movements; the present foreign-exchange situation. MR. DOWRIE.
149. **BUSINESS CYCLES.** American business conditions since 1890 with regard to the great cycles of alternate prosperity and depression, and financial panics. Critical examination of all the available business barometers designed to forecast similar conditions. MR. EBERSOLE.
176. **COMMERCIAL POLICIES.** Theory of international commerce; free trade, reciprocity, protection, subsidies, preferential treatment, the open door, international finance, commercial treaties, foreign policies, and other governmental and organized efforts to affect trade. American problems emphasized. MR. BLAKEY.
177. **FOREIGN TRADE.** Nature and methods of foreign trade. Character of the foreign trade of the United States and leading countries of the world; organization for foreign trade. MR. BLAKEY.
- 180-181-182. **SENIOR SEMINAR IN ECONOMICS.** Advanced course work in marketing, production, consumption, prices, land economics, finance, statistics, accounting, transportation, etc., to suit the needs of advanced groups of students in these fields. MR. DOWRIE, MR. BLACK, MR. BLAKEY, MR. GARVER, MR. HEILMAN, MR. HOLMES, MR. MUDGETT, MR. WORKING.
- 191-192. **PUBLIC FINANCE.** National government revenues, expenditures, and debts. This includes a study of the principles and various forms of taxation, budgetary legislation and control, war and emergency financiering, the shifting and incidence of taxes and fiscal reforms. MR. BLAKEY.

193. STATE AND LOCAL TAXATION. Principles and problems, e.g., state and local taxation of lands, mineral resources, forests, corporation, incomes, inheritances: also studies of classification, separation, local option, exemption, double taxation, evasion, assessment, centralized administration. MR. BLAKEY.

EDUCATIONAL ADMINISTRATION AND SUPERVISION

COLLEGE OF EDUCATION

Professor FLETCHER H. SWIFT; Instructor JEAN H. ALEXANDER.

COURSES

5. PUBLIC EDUCATION IN THE UNITED STATES. A brief survey of the factors determining the problem of public education in America, followed by a brief account of the development and organization of typical state school systems. Not open to those who have credit in History and Philosophy of Education I. MR. SWIFT, MISS ALEXANDER.
119. THE ELEMENTARY-SCHOOL CURRICULUM. Principles underlying organization of subject-matter for courses in elementary school, including a critical examination of curricula, syllabi, and school texts in the light of their function in the teaching and administration of the curriculum.

EDUCATIONAL PSYCHOLOGY

COLLEGE OF EDUCATION

Assistant Professors HERMIONE L. DEALEY, MARVIN J. VAN WAGENEN.

COURSES

45. ELEMENTARY EDUCATIONAL PSYCHOLOGY. A survey of fundamental facts of human behavior involved in educational activities. Open to seniors, juniors, and qualified students in third quarter of sophomore year upon advice of Dean Haggerty. MISS DEALEY.
- 106-107-108. ADVANCED EDUCATIONAL PSYCHOLOGY. Advanced work in genetic psychology, origin and nature of human organism, development and control of instincts. Methods of measuring rate of learning; typical learning experiments. Group and individual differences, their relations to educational practice. MR. VAN WAGENEN.
- III. EDUCATIONAL DIAGNOSIS. Typical educational problems involving educational scales and standard tests. Nature of tests, methods of use, analysis of results obtained, and programs of remedial educational procedure, based on the results of the tests. MR. VAN WAGENEN.

ENTOMOLOGY AND ECONOMIC ZOOLOGY

Professors WILLIAM A. RILEY, ARTHUR G. RUGGLES, FREDERIC L. WASHBURN; Associate Professor WILLIAM MOORE; Assistant Professors ROYAL N. CHAPMAN, HARRY H. KNIGHT, OSCAR W. OESTLUND; Instructor SAMUEL A. GRAHAM.

General statement.—Courses in this department are closely correlated with those offered by the Department of Animal Biology of the College of Science, Literature, and the Arts. Courses 37-38-39, 44, 117-118-119, 125-126-127, 130, 139-140, 144-145-146, and 197 of this division are also offered under these numbers by the Department of Animal Biology.

1. INTRODUCTORY ENTOMOLOGY. See Course 37-38-39 or An. Biol. 16.
2. ECONOMIC ENTOMOLOGY. The life histories, habits, and methods of control of the insect pests of orchard, field, and garden. Laboratory work in the dermination of the more important forms. MR. RUGGLES.
3. ELEMENTARY ECONOMIC ENTOMOLOGY. A brief course dealing with the characteristics and habits of insect pests and beneficial insects and methods of control. MR. RUGGLES.
4. ECONOMIC VERTEBRATE ZOOLOGY. Relations of birds and wild animals to agriculture. Lectures, laboratory, and field work. Identification and studies of Minnesota birds and wild animals affecting the horticulturist and agriculturist, methods of combating injurious and conserving useful forms. MR. WASHBURN.
5. ELEMENTARY FOREST ENTOMOLOGY. A study of the life histories and methods of controlling insects affecting shade and forest trees. MR. GRAHAM.
6. INSECTS OF FOREST PRODUCTS. Treating life history, habits, and control of insects attacking dead or freshly felled wood, and forest products. MR. GRAHAM.
8. VARIETIES AND HABITS OF FUR-BEARING ANIMALS. Deals with North American fur-bearers with special reference to their adaptability to domestication and commercial fur farming. MR. WASHBURN.
12. FOREST ZOOLOGY. Forest animals. Relation of birds and of various four-footed animals to forest protection. Habits, range, usefulness; the manner of protecting the important large and small game, fish, and birds; fish culture. Lectures and laboratory work. MR. WASHBURN.
20. HOME ECONOMIC ENTOMOLOGY. Designed for home economics students. Insects as related to public health problems, insects of the household and those attacking foods will be discussed. The principles of control of insect pests of plants will be considered. MR. RILEY, MR. RUGGLES.

- 37-38-39. GENERAL ENTOMOLOGY. A more extended course than 1, leading up to discussion of the principles of taxonomy and their application to the classification of insects. Textbook, lectures, quizzes, and laboratory. MR. OESTLUND.
44. INTRODUCTORY COURSE IN ANIMAL PARASITES AND PARASITISM. Lectures and laboratory work. A consideration of the origin and biological significance of parasitism, and of the structure, life history, and economic relations of representative animal parasites. Methods of control and prevention will be emphasized. MR. RILEY.
- 117-118-119. GENERAL ECOLOGY OF INSECTS. General ecology with special reference to the insects of Minnesota. Frequent field trips. Lectures, laboratory, and field work. MR. CHAPMAN.
- 125-126-127. ADVANCED GENERAL ENTOMOLOGY. Advanced work in the lines of morphology and classification of insects with lectures on the history of entomology. Lectures and laboratory. MR. OESTLUND.
130. BIOLOGY AND TAXONOMY OF THE APHIDIDAE. Intensive study of the natural history, bibliography, and classification of the Aphididae. Additional work is offered in Course 197. MR. OESTLUND.
- 139-140. HISTOLOGY AND DEVELOPMENT OF INSECTS. Lectures and laboratory work on the histology, embryonic, and postembryonic development of insects. Individual work along these lines is available to properly qualified students in Course 197. MR. RILEY.
- 144-145-146. ANIMAL PARASITES AND PARASITISM. Lectures and laboratory work. Origin and biological significance of parasitism; structure, life history, and economic relations of representative parasites. Second term devoted primarily to the relation of insects to diseases of man and animal. MR. RILEY.
150. INSECTICIDES AND THEIR ACTION. A study of the chemical composition, the physical properties, and the physiological action of standard, of little-known, and of new insecticides. MR. MOORE.
197. INTRODUCTION TO RESEARCH. Preparation for investigational work in lines of entomology, parasitology, or economic zoology. Advanced laboratory, field, and library work; training in preparation of bibliographies and manuscripts; special problems. Summer work should be planned when possible. MR. KNIGHT, MR. OESTLUND, Systematic Entomology; MR. RUGGLES, General Economic Entomology; MR. CHAPMAN, Insect Ecology; MR. MOORE, Insecticides; MR. RILEY, Parasitology, Insect Morphology; MR. WASHBURN, Economic Vertebrate Zoology.

FARM ENGINEERING

Professor WILLIAM BOSS; Associate Professors HARRY B. ROE, EARL A. STEWART, MARK J. THOMPSON; Assistant Professors GUY R. B. ELLIOTT, JAMES B. TORRANCE, ARTHUR G. TYLER, HALL B. WHITE; Instructors J. GRANT DENT, MAURICE G. JACOBSON, ALLEN D. JOHNSTON.

COURSES

3. MECHANICAL DRAWING. Materials, instruments, and their uses. The conventions, lettering, scale reading, kinds of drawings, practice in cabinet projection and drawing building plans. MR. JACOBSON.
4. BLACKSMITHING. The management of forge and fire in bending, shaping, and welding iron. MR. JOHNSTON.
5. CARPENTRY. The use and care of carpentry tools. The construction of farm equipment such as hayracks, self-feeders, etc. Building construction. Painting and wood-finishing. MR. WHITE.
7. FARM STRUCTURES. The planning, designing, and location of farm buildings including specifications and estimates of cost. MR. WHITE.
3. FARM ENGINEERING. A general course of farm engineering. Lectures on farm mechanics, drainage, water supply, heating, sanitation, buildings, roads, power machinery, and land-clearing. MR. BOSS.
11. APPLIED MATHEMATICS. Rules of practical mathematics with special attention to formulas and problems directly related to agricultural and forestry work; e.g., areas, volumes, percentages, proportions, variations, investments, cost problems, etc. —————
13. FARM MOTORS I. Theory, operation, care, and repair of gasoline engines. MR. TORRANCE.
14. FARM MOTORS II. Instruction and practice in the care, adjustment, and operation of the farm tractor. MR. TORRANCE.
15. MECHANICAL LABORATORY. Exercises in harness repair, knots and rope splicing, belt lacing, soldering, babbiting, pipe fitting, drilling, and work with cold metals. MR. DENT.
17. ADVANCED BLACKSMITHING. Bending, shaping, welding, and tempering of steel. MR. JOHNSTON.
18. SURVEYING. Plain surveying as applied to forestry. Mensuration, leveling, elements of topography, and mapping. MR. ROE.
23. GENERAL PHYSICS. An introductory course in the elements of physics for those who have not had physics in high school. The study of mechanics, heat, light, and electricity with laboratory work. MR. STEWART, MR. TYLER.

DESCRIPTION OF COURSES

24. AGRICULTURAL PHYSICS I. An applied course involving lecture and laboratory work in mechanics and heat. Special emphasis given to farm power, hydraulics, heating, ventilation, and meteorology. MR. STEWART.
25. AGRICULTURAL PHYSICS II. A practical lecture, recitation, and laboratory course on electricity and light, involving a study of electric generating plants, batteries, motors, lighting systems and a study of light and radiant energy as applied to farm problems. MR. STEWART.
28. LAND-CLEARING. A study of land-clearing methods, explosives, and machinery. Farm development in cut-over timber districts. MR. THOMPSON.
31. FARM SURVEYING AND DRAINAGE. Elementary principles and practice including farm mensuration, simple leveling, topography, grade determination, field technic of drainage construction and lecture on drainage in relation to farm development. MR. ROE, MR. ELLIOTT.
34. HOUSEHOLD MECHANICS AND HEAT. Lectures, recitations, and laboratory work on household appliances and methods of operation, such as water supply, plumbing, sewage disposal, washing, cooking, refrigeration, heating, and ventilation. MR. STEWART.
35. HOUSEHOLD ELECTRICITY AND LIGHT. A course with laboratory work on the fundamental principles of electricity and the use of electrical appliances in the home, with a special study of light, color, and lighting. MR. STEWART.
101. ADVANCED DRAINAGE. Special drainage problems including surface and subsurface run-off, studies in peat-land drainage, shape and regulation of water table in relation to root growth, etc. MR. ROE.

FORESTRY

Professors EDWARD G. CHEYNEY, JOHN H. ALLISON; Instructor GILBERT H. WIGGIN.

COURSES

1. GENERAL FORESTRY. A brief history of the development of forestry in Europe and America; its bearing on the forestry problems of the United States; description of the forests of the United States. Lectures and collateral reading. MR. CHEYNEY.
20. GRAZING. History of grazing in the west. Kinds of stock used. Forage plants. Regulations and methods of handling stock. Range management and protection. Lectures, recitations, and reading. MR. ALLISON.
26. TREE CROPS. The part trees play in the successful development of the farm. The relation of the forests to agriculture and animal husbandry. The farm and the timber supply. MR. CHEYNEY.

27. GROVES AND WINDBREAKS. Trees and their relation to the farm. Planning and planting farm windbreaks and shelterbelts. Utilization and marketing of farm, grove, or woodlot products. MR. WIGGIN.

GEOLOGY AND MINERALOGY

COLLEGE OF SCIENCE, LITERATURE, AND THE ARTS

Professor WILLIAM H. EMMONS; Instructors IRA S. ALLISON, JOHN W. GRUNER, GEORGE M. SCHWARTZ, GEORGE A. THIEL, W. COURTNEY WERNER.

COURSES

- 1-2. GENERAL GEOLOGY. A synoptical treatment of materials of the earth and of geologic processes. Physiographic, dynamic, structural, and historical geology. Lectures, laboratory work, field excursions, and conferences outside of class hours. MR. EMMONS, MR. ALLISON, MR. THIEL.
- 7-8. LABORATORY WORK. Open only to students taking Course 1-2. Supplements Course 1-2 with study of rocks and ores, topographic and geologic maps, and reference reading. MR. ALLISON.
- 11-12. GENERAL GEOLOGY. A synoptical treatment of materials of the earth and of geologic processes. Physiographic, dynamic, structural, and historical geology. Lectures, laboratory work, field excursions, and conferences outside of class hours. MR. WERNER.
- 21-22. ESSENTIALS OF MINERALOGY. The crystal systems; morphological, physical, and chemical character of minerals; occurrence, genesis, and uses of minerals; classification and description of common minerals. Determinative work in laboratory, blowpipe analysis, sight identification. MR. GRUNER.
29. GENERAL PHYSIOGRAPHY. Principles of earth sculpture; physiographic changes in progress, and agencies causing them; hydrography and oceanography; planetary relations; climatology; field excursions.
34. METEOROLOGY. The properties and phenomena of the atmosphere, including composition, temperature, pressure, and circulation; the work of the weather bureau; the major climatic divisions of the earth and their climates. —————
37. ECONOMIC AND COMMERCIAL GEOGRAPHY. A study of the geographic factors influencing production and trade. Natural resources in their relation to commerce and industry and the major trade routes will be emphasized. —————
- 51-52. ECONOMIC GEOLOGY. The mineral resources of the United States. The origin, occurrence, distribution, and uses of the more important minerals and mineral fuels of economic value. Lectures and field excursions. MR. SCHWARTZ.

GERMAN

COLLEGE OF SCIENCE, LITERATURE, AND THE ARTS

Professor CARL SCHLENKER; Assistant Professor JAMES DAVIES; Instructors LYNWOOD DOWNS, COWDEN LAUGHLIN.

1. BEGINNING A. Pronunciation, conversation, grammar, and composition; selected readings in easy prose and verse. _____
2. BEGINNING B. Continuation of Course I. _____
3. BEGINNING C. Selected texts from modern writers. _____
10. RAPID READING. Modern narrative prose. _____
11. ADVANCED RAPID READING. Continuation of Course 10. Representative works of the eighteenth and nineteenth centuries. _____
14. NINETEENTH-CENTURY PROSE. Narrative readings from modern novelists. _____
- 28-29. ADVANCED CHEMICAL GERMAN. Selections from more difficult works on chemistry. _____
- 31-32. MEDICAL GERMAN. Readings from general works on physiology, anatomy, and bacteriology. _____
40. COMMERCIAL GERMAN. Vocabulary of commerce, business forms; reading of texts on economics. _____
- 50-51-52. COMPOSITION. Aims to develop grammatical correctness. Translations from English selections. Essay-writing on assigned subjects. MR. LAUGHLIN.
- 53-54-55. CONVERSATION. Aims to develop ease and correctness of oral expression. Organized on the laboratory plan—one hour credit with two hours of recitation and one hour of outside reading. MR. LAUGHLIN.
63. MODERN DRAMA. Plays of modern dramatists; Hauptmann, Sudermann, Fulda, and others. MR. DAVIES, MR. DOWNS.
64. CLASSIC DRAMA. Plays of Lessing, Goethe, and Schiller. MR. DAVIES, MR. DOWNS.
74. GERMAN POETS. Survey of German poetic literature. MR. DAVIES, MR. DOWNS.

HISTORY AND PHILOSOPHY OF EDUCATION

COLLEGE OF EDUCATION

Professor FLETCHER H. SWIFT; Instructor JEAN H. ALEXANDER.

COURSES

1. A BRIEF COURSE IN THE HISTORY OF EDUCATION. Current school problems and educational theories in the light of their history. Emphasis

upon secondary education and those aspects of education of most immediate concern to high-school teachers. Not open to those who have credit in Educational Administration 5. MR. SWIFT, MISS ALEXANDER.

- 101-102-103. FOUNDATIONS OF MODERN EDUCATION. Interpretative historical study of elements in modern education derived from Hebrews, Greeks, Romans, Middle Ages, etc. Emphasis upon secondary and higher education, origin and results of monopoly of cultural conception of education and cultural studies. MR. SWIFT.

HOME ECONOMICS

Professor MILDRED WEIGLEY; Instructor ALICE M. CHILD.

COURSE

24. CAMP COOKERY. Designed to give prospective foresters, engineers, and others a knowledge of the simpler cookery processes, and of such adaptations as are practicable in the several types of out-of-doors camps. (Given in alternate years. Offered in 1921-22.) MISS CHILD.

HORTICULTURE

Professor WILLIAM H. ALDERMAN; Associate Professors WILFRID G. BRIERLEY, LEROY CADY, MAXWELL J. DORSEY; Assistant Professor WILLIAM T. TAPLEY; Instructor FRED A. KRANTZ; Assistant JOHN W. BUSHNELL; Extension Specialist ROGER S. MACKINTOSH.

COURSES

6. FRUIT-GROWING. The fundamental principles of fruit-growing. Sites, soils, nursery stock, planting and planting plans, tillage, fertilization, cover crops, pollination, frost avoidance, pruning, and thinning. Lectures, recitations, references, and laboratory work. MR. ALDERMAN.
21. SMALL-FRUIT CULTURE. A study of the cultural practices for each of the small fruits. Brief consideration is given to their botanical relationships and the history of the commercial development. Lectures, problems, and survey of literature. MR. BRIERLEY.
32. VEGETABLE-GROWING. Fundamentals of vegetable-growing applied to commercial and home gardens, scope of vegetable-gardening and place in agriculture. Capital required, locations, soil, equipment, marketing, storage, systems of production. Cultural methods for the various crops. MR. TAPLEY, MR. BUSHNELL,
33. VEGETABLE-FORCING. Commercial growing of vegetables in the greenhouse; types, construction, and management of forcing structures, soils, fertilization, soil sterilization, relation of industry to out-door vegetable-farming, crop production and marketing. MR. TAPLEY.

50. **FLORICULTURE.** Designed to give the student a working knowledge of the culture and uses of common house plants, annuals, perennials, and greenhouse plants. Lectures, reference-reading, and laboratory. **MR. CADY.**
56. **PROPAGATION AND NURSERY PRACTICE.** Methods of propagating plants by seed, cuttings, layers, and grafting. Practical work in management of nursery stock, bulbs, and plants. Lectures, reference-reading, and field trips. **MR. CADY.**
71. **LANDSCAPE-GARDENING.** The practice and principles of landscape-gardening as applied to the home and community. Lectures and field trips to parks and private grounds. **MR. CADY.**
91. **ADVANCED GENERAL HORTICULTURE.** For students in agricultural education. Continuation of Course 90 with emphasis given to more advanced problems in orchard and garden management, judging and exhibiting, management of school gardens, ornamental planting of home and school grounds. **MR. ALDERMAN, MR. CADY, MR. TAPLEY.**
93. **JUDGING HORTICULTURAL CROPS.** The principles and practice of judging and exhibiting fruits, vegetables, and flowers. **MR. ALDERMAN, MR. BRIERLEY, MR. CADY, MR. TAPLEY.**
107. **ORCHARD MANAGEMENT.** A detailed study of the various operations in orchards and berry fields. Operating costs and profits. Lectures, laboratory, and individual problems. **MR. BRIERLEY.**
109. **PRINCIPLES OF GENETICS.** Lectures and laboratory work designed to familiarize the student with the underlying principles of breeding, heredity, variation, biometry, and evolution are emphasized. Same as Agronomy 131. **MR. DORSEY, MR. HAYES.**
110. **HORTICULTURAL CROP-BREEDING.** Applied genetics are emphasized. The method of breeding each of the important horticultural crops with special attention to experiment station investigations and to the methods used by plant breeders. **MR. DORSEY.**
111. **SYSTEMATIC POMOLOGY.** A study of fruit varieties. Classification, description, identification, and elements of judging. Lectures, laboratory, and a survey of the literature. **MR. ALDERMAN, MR. BRIERLEY.**
131. **ADVANCED VEGETABLE PRODUCTION.** A study of the business of vegetable-gardening, special problems, variety improvement, production of seed, investigation and research, reviews and reports on recent literature. **MR. TAPLEY.**
132. **SYSTEMATIC OLERICULTURE.** The origin, botany, varieties, and types of the different vegetables, their characteristics and adaptation to different cultural and market conditions, identification and classification studies, judging and exhibiting. **MR. TAPLEY.**

133. **COMMERCIAL TRUCK-GROWING.** Truck-growing centers of the United States, cultural methods, special machinery and equipment, market methods, shipping points. Adaptation of the truck crops to Minnesota, commercial production for canneries, handling and shipping. MR. TAPLEY.
135. **POTATO PRODUCTION.** A study of the origin, botany, regional distribution, economic importance, group classification, standardization of varieties according to soil, climate, and markets. Identification, exhibiting, judging, cultural methods, seed selection and certification, marketing and utilization. MR. KRANTZ.
151. **ADVANCED FLORICULTURE.** Lectures, assigned readings, laboratory, and special problems dealing with the culture, botany, and history of florists' plants and methods of greenhouse management. MR. CADY.
- 191-192. **SPECIAL PROBLEMS.** A study of problems based upon the work given in the preceding courses. MR. ALDERMAN.
- 193-194-195. **HORTICULTURAL SEMINAR.** Reports and discussions of problems and investigational work. Horticultural staff.

MILITARY SCIENCE AND TACTICS

Professor GIRARD STURTEVANT, Colonel, Infantry, Chairman; Assistant Professors BEN W. FEILD, Major, Infantry; LAURENCE T. WALKER, Major, Coast Artillery Corps; LEE R. WATROUS, JR., Major, Coast Artillery Corps; HARRY C. INGLES, Major, Signal Corps; EDWARD G. SHERBURNE, Major, Infantry; EDGAR B. MOOMAU, 1st Lieutenant, Infantry; HAL M. ROSE, 1st Lieutenant, Cavalry; Instructors: ALFRED BRANDT, Master Sergeant, Infantry; HARRY E. STRIDER, Master Sergeant, Signal Corps; JOSEPH HAVLICEK, Regimental Commissary Sergeant, Retired; JOSEPH LEES, 1st Sergeant, Retired; JOHN McWILLIAMS, 1st Sergeant, Retired; WILLIAM R. FINKE, 1st Sergeant, Coast Artillery Corps; WILLIAM L. HOGAN, 1st Sergeant, Coast Artillery Corps; AUBREY R. DUNKUM, 1st Sergeant, Coast Artillery Corps; KENNA B. CALDWELL, Sergeant, Coast Artillery Corps; HENRY W. BROWN, Sergeant, Coast Artillery Corps; CLARENCE G. LANGE, Sergeant, Field Artillery; EDMUND T. McCANN, Sergeant, Infantry; FRED LILLIE, Sergeant, Infantry; PRESTICE B. RHODES, Sergeant, Infantry; CLARENCE C. SHELTON, Sergeant, Infantry; HERMAN SMITH, Sergeant, Infantry; CASPER M. HECKEMEYER, Sergeant, Infantry.

COURSES

- 1-2-3. **FIRST-YEAR BASIC COURSE R.O.T.C.** Practical instruction in schools of the soldier, company, and battalion; signals, ceremonies, first aid.
- 4-5-6. **SECOND-YEAR BASIC COURSE R.O.T.C.** Practical and theoretical instruction in schools of the company and battalion; advance and rear guard drill; practical and theoretical instruction in guard duty. Gallery practice. Ceremonies. Infantry, coast artillery, and signal corps.

51-52-53. FIRST-YEAR ADVANCED COURSE R.O.T.C.

54-55-56. SECOND-YEAR ADVANCED COURSE R.O.T.C.

MUSIC

COLLEGE OF SCIENCE, LITERATURE, AND THE ARTS

Professor CARLYLE M. SCOTT; Instructors ABE PEPINSKY, GERTRUDE REEVES, KARL SCHEURER.

General statement.—Credit is offered to seniors and juniors in the College of Agriculture, Forestry, and Home Economics, who may wish to elect work in the Department of Music. Nine credits may be obtained.

COURSES

22-23-24. VIOLIN. Candidate must be able to play the first ten of Kreutzer's forty etudes, and the easier Handel and Mozart sonatas. MR. PEPINSKY, MR. SCHEURER.

40-41-42. ORCHESTRA. MR. PEPINSKY.

43-44-45. CHOIR. MR. SCOTT.

46-47-48. APPRECIATION OF MUSIC. A non-technical course. MISS REEVES.

PHYSICAL EDUCATION

FOR MEN

Director LOUIS J. COOKE; Assistant Director WILLIAM K. FOSTER; Instructors EDWIN S. BROWN, PERCY C. GLIDDEN, CARL B. ROEMER; Assistants FRANK GILMAN, HARRY GOLDIE.

General statement.—The purpose of the department is to provide all men of the University opportunity for exercise in order to maintain and build up their general health. It also provides special training for the correction of physical defects and functional derangements.

A physical examination is required of all new matriculants, and of all others using the department privileges, at the beginning of the year, and as often during their college course as their physical condition may indicate. Students taking the required work in physical education are examined at the close of the year. A study of these records shows a marked improvement in the standard of health of the average student during his college course.

The gymnasium, swimming-pool, and baths are open to all students of the University, who are free to use the apparatus and to pursue a course in physical training under the supervision of the director and his assistants.

Those students taking the required course in physical education, who can not swim must make a reasonable effort, as determined by the department, to pass the swimming and life-saving requirements, and will be assigned special hours for instruction.

COURSES

1. PERSONAL HYGIENE. Two hours per week; first six weeks of each quarter. Examination at close of course. DR. COOKE, DR. BROWN, MR. FOSTER.
- 2-3-4. GYMNASIUM AND SWIMMING. Two hours a week for the winter quarter. Required qualifications in swimming, life-saving, bar-vaulting, jumping, sprinting, running, and on heavy apparatus. MR. FOSTER, MR. GLIDDEN, MR. ROEMER.
- 5-6-7. ADVANCED LEADERS. Three hours a week. MR. FOSTER.
- 8-9-10. CORRECTIVE GYMNASTICS. Three to six hours a week instead of regular gymnasium or military drill in case of physical disability. DR. BROWN.
- 11-12. WRESTLING. Three times per week. Students admitted by special assignment. —————
- 13-14-15. INTERMEDIATE SWIMMING. Life-saving, efficiency swimming, and fancy diving. Instruction is given in rescuing and restoring the apparently drowned and other useful swimming accomplishments. MR. GLIDDEN.
- 16-17-18. ADVANCED SWIMMING. Life-saving, efficiency swimming, and fancy diving. Instruction is given in rescuing and restoring the apparently drowned and other useful swimming accomplishments. MR. GLIDDEN.
- 19-20. BOXING. By special arrangement a few students may be accommodated in this class which meets twice per week. MR. GOLDIE.
- 21-22-23. INTRAMURAL ATHLETICS. Competitive games in the various athletic leagues in football, basket-ball, hockey, track, and field events, baseball, tennis, swimming, handball, bowling, etc. MR. FOSTER.

PHYSICS

COLLEGE OF SCIENCE, LITERATURE, AND THE ARTS

Professors HENRY A. ERIKSON, ANTHONY ZELENY; Professorial Lecturer LOUALLEN F. MILLER; Instructor JOSEPH VALASEK.

COURSES

1. ELEMENTS OF MECHANICS AND SOUND. Mechanics of solids, fluids, wave motion, and sound. A study of the simpler fundamental principles. First part of a general course 1, 2I, 3I, 4I. Course 2 should be taken in conjunction with this course. MR. ERIKSON.
2. ELEMENTS OF MECHANICS LABORATORY. Measurements in the mechanics of solids, fluids, and wave motion; the laboratory part supplementing Course 1. MR. ERIKSON.

9. ACOUSTICS. A study of the fundamental principles of sound. A course designed primarily for the students in the Department of Music. Open also to other students. MR. ERIKSON.
21. HEAT. A study of the principles underlying heat phenomena. Course 22 should be taken in conjunction with this course. MR. MILLER.
22. HEAT LABORATORY. The laboratory part supplementing Course 21. MR. MILLER.
31. OPTICS. A study of the principles underlying light phenomena. Course 32 should be taken in conjunction with this course. MR. VALASEK.
32. OPTICS LABORATORY. The laboratory part supplementing Course 31. MR. VALASEK.
41. MAGNETISM AND ELECTRICITY. A study of the principles underlying magnetic and electric phenomena. Course 42 should be taken in conjunction with this course. MR. ZELENY.
42. MAGNETISM AND ELECTRICITY. The laboratory part supplementing Course 41. MR. ZELENY.

PLANT PATHOLOGY AND BOTANY

Professors EDWARD M. FREEMAN, ELVIN C. STAKMAN; Instructors HENRY D. BARKER, LOUISE DOSDALL, ALVIN H. LARSON, JULIAN G. LEACH, JAMES L. SEAL; Extension Specialist RAYMOND C. ROSE.

COURSES

1. PLANT PATHOLOGY. Elementary study of plant diseases due to fungi, bacteria, and slime molds; life histories and preventive methods. Lectures, laboratory, and reference. Not open to those who have completed 10. MR. STAKMAN, MR. LEACH, MR. SEAL.
7. WEEDS AND GRASSES. Agricultural and applied botanical study of weeds and grasses with special reference to agricultural importance. MR. LARSON.
9. WEEDS AND SEED-TESTING. Detailed study of seed-testing methods and seed legislation. Weed and crop seeds and weed plants studied with special reference to identification. MR. LARSON.
10. FOREST PATHOLOGY. Elementary study of plant diseases due to fungi, bacteria, and slime molds; life histories and preventive methods. Lectures, laboratory, and reference. Not open to those who have completed 1. MR. STAKMAN, MR. LEACH, MR. SEAL.
12. SEED PROBLEMS. Special seed problems are assigned. Advanced work in seed-testing methods. MR. LARSON.

14. PLANT-DISEASE CONTROL. A detailed study of methods of controlling diseases of plants of parasitic origin. Spray materials and spray machinery. Practical applications. MR. BARKER.

ADVANCED COURSES

- 105-106-107. MYCOLOGY. A general study of the morphology, taxonomy, and biology of fungi. Lectures, laboratory, greenhouse, and field work. MR. FREEMAN, MR. STAKMAN, MISS DOSDALL.
- 108-109. METHODS. Plant pathological methods including mycological and bacteriological technic. Laboratory, lecture, and greenhouse work. Special problems. MR. STAKMAN, MR. LEACH.
110. PRINCIPLES OF PATHOLOGY. Comparative biology of plant pathogens; pathological plant anatomy; parasitism, biologic specialization, resistance, and immunity. Will be given in close coöperation with Agricultural Biochemistry Division and divisions offering work in plant-breeding. MR. STAKMAN, MR. BARKER.
111. DISEASES OF FIELD CROPS. Detailed study of diseases of cereal and forage crops, including symptomology, etiology, and practical methods of control. Laboratory, lecture, and field work. MR. STAKMAN, MR. BARKER.
112. DISEASES OF FRUIT AND VEGETABLE CROPS. Special study of diseases of fruit and vegetable crops, especially those important in Minnesota. Laboratory, lecture, and greenhouse work. —————

POLITICAL SCIENCE

COLLEGE OF SCIENCE, LITERATURE, AND THE ARTS

Professor CEPHAS D. ALLIN; Associate Professor ROBERT E. CUSHMAN.

COURSES

1. AMERICAN GOVERNMENT. Organization and actual workings of the national government; nature and origin of the American governmental system.
7. STATE AND LOCAL GOVERNMENT. Comparison of American state governments, especially Minnesota; relation of states to the United States and to local units of government; recent experiments such as initiative and referendum, the recall and primaries; social and economic legislation. MR. CUSHMAN.

POULTRY HUSBANDRY

ANIMAL INDUSTRY GROUP

Professor ARTHUR C. SMITH; Extension Specialists NORTON E. CHAPMAN, ANNABEL CAMPBELL.

COURSES

1. **POULTRY.** The poultry industry; best methods of care and management of fowls, turkeys, ducks, and geese and the most important breeds of same. MR. SMITH.
2. **POULTRY-JUDGING.** The history, standard requirements, and common defects of the leading commercial, standard breeds and varieties and determination and standard values by the score-card and comparison methods. MR. SMITH.
4. **INCUBATING AND BROODING.** Instruction and practice in incubation and brooding, selection of breeding stock and eggs for hatching, and feeding young chicks. Of practical value to teachers of agriculture and poultry raisers. MR. SMITH.
5. **ADVANCED POULTRY-JUDGING.** Practice in close selection for standard values of all different color patterns and principal types; mating to produce high standard quality. MR. SMITH.

PSYCHOLOGY

COLLEGE OF SCIENCE, LITERATURE, AND THE ARTS

Associate Professors RICHARD M. ELLIOTT, WILLIAM S. FOSTER, HERBERT WOODROW; Assistant Professors MABEL R. FERNALD, KARL S. LASHLEY; Instructor CHARLES BIRD.

COURSES

- 1-2-3. **GENERAL PSYCHOLOGY.** An introductory survey of psychology; its material, fundamental laws, applications, and relations to other sciences. MR. ELLIOTT.
- 4-5. **INTRODUCTORY LABORATORY PSYCHOLOGY.** Simple experiments providing the beginner illustrative material and training in the methods of laboratory psychology. MR. FOSTER.
7. **INTRODUCTORY LABORATORY PSYCHOLOGY.** Same as Course 4-5. MR. FOSTER.
- 101-102. **EXPERIMENTAL PSYCHOLOGY.** The theory and technic of the leading methods of experimental investigation in human psychology. One lecture, four laboratory hours per week. MR. WOODROW.
- 108-109. **ADVANCED GENERAL PSYCHOLOGY.** A systematic presentation of the laws of the normal adult mind, based upon study of experimental results. Lectures, recitations, and reports. —————
- 114-115. **HUMAN BEHAVIOR.** An analysis from the point of view of the objective school of psychologists. MR. ELLIOTT.
- 119-120. **ANIMAL BEHAVIOR.** The development of reaction-systems in animals, with emphasis upon the application of studies of animals to the solution of general problems in physiological psychology. MR. LASHLEY.

121. **NEURO-PSYCHOLOGY.** Specialization of functions in the nervous system in relation to behavior. Discussion from the standpoint of psychology of current theories of integration and localization. MR. LASHLEY.
- 125-126. **DIFFERENTIAL PSYCHOLOGY.** Important distinguishing characteristics (psychological) of individuals and of groups. Emphasis on experimental and statistical methods of discovering differences and of making comparisons. Each student participates in investigation of definite problems and in analysis of results. MISS FERNALD.
127. **SOCIAL PSYCHOLOGY.** A study of the dependence of familiar forms of social organization and behavior upon the fundamental laws of mental activity. The adjustment of the innate mental equipment of the individual to the norms of social groups. MR. BIRD.
- 135-136. **DYNAMIC PSYCHOLOGY.** The constituents of character; their development, their interrelationship, and their rôle in the determination of human affairs. MR. WOODROW.
- 144-145. **ABNORMAL PSYCHOLOGY.** A systematic review of psychopathology in relation to normal behavior. MR. LASHLEY.

RURAL PUBLICATIONS AND JOURNALISM

Professor WILLIAM P. KIRKWOOD; Extension Specialist EDWIN C. TORREY.

General statement.—The aim of this division is to give practical training in agricultural journalism and in agricultural publicity and bulletin-writing.

COURSES

- 10-11-12. **AGRICULTURAL JOURNALISM.** Gathering and writing agricultural news and writing articles for the agricultural press and other class papers; farm-paper editing. Lectures and practical work. MR. KIRKWOOD.
19. **AGRICULTURAL PUBLICITY.** Mediums and methods through which information may be brought to attention of communities and people of the open country. MR. KIRKWOOD.

RHETORIC

Assistant Professors ROBERT C. LANSING, HARRY J. BURTIS; Instructors MINNIE M. CLAUSEN, JESSIE W. JENKINS, RUTH MOHL.¹

General statement.—Rhetoric credits will not be granted officially until the close of the second quarter of the senior year.

Any instructor who finds that a student is deficient in English will submit the name of the student together with the evidence to the chairman of the Students' Work Committee. If the evidence warrants, the committee will send the student to the Section of Rhetoric for such additional work in English as is needed. This work the student must take, without credit, to validate his freshman and sophomore rhetoric credits.

¹ Leave of absence, 1921-22.

Students whose work in the rhetoric courses shows at any time an inadequate knowledge of the conventions of English will be required to drop the course and enter a class in elementary rhetoric. These students will be required to complete three additional credit hours in rhetoric.

COURSES

1. RHETORIC I. Note-taking, gathering and organizing material, oral and written exposition, paragraph structure, supplementary reading. MR. LANSING, MISS CLAUSEN, MISS JENKINS.
2. RHETORIC II. Sentence structure, diction, exposition, supplementary reading. MR. LANSING, MISS CLAUSEN, MISS JENKINS.
3. RHETORIC III. Description, narration, supplementary reading. MR. LANSING, MISS CLAUSEN, MISS JENKINS.
4. ELEMENTARY RHETORIC. Elementary grammatical and rhetorical principles. MISS JENKINS.
11. ARGUMENTATION. Gathering evidence, reasoning, briefing, formal and informal argument, persuasion, debating. MR. LANSING, MR. BURTIS.
22. PUBLIC SPEAKING. A practical course in fundamentals of speech-making. Rules of order and practice in conducting assemblies included. MR. BURTIS.
24. ADVANCED PUBLIC SPEAKING. A course in preparing and delivering occasional addresses and informal lectures. MR. BURTIS.
31. SURVEY OF ENGLISH LITERATURE I. Survey of English literature of the sixteenth, seventeenth, and eighteenth centuries. MR. LANSING.
32. SURVEY OF ENGLISH LITERATURE II. Survey of English literature of the nineteenth century. MR. LANSING.

ROMANCE LANGUAGES

COLLEGE OF SCIENCE, LITERATURE, AND THE ARTS

Professors EVERETT W. OLMSTED, COLBERT SEARLES; Associate Professors RALPH E. HOUSE, RUTH S. PHELPS; Assistant Professors FRANCIS B. BARTON, JULES T. FRELIN; Professorial Lecturer ANTONIO HERAS; Instructors CHARLES B. DRAKE, MARGUERITE GUINOTTE.

COURSES

French

- 1-2. BEGINNING FRENCH. Pronunciation, grammar, oral exercises, translation. —————
- 3-4. INTERMEDIATE FRENCH. Review of grammar, connected prose composition, conversation, and reading of representative authors. —————

20. ORAL AND WRITTEN FRENCH. Practical French conversation and composition. _____
- 21-22-23. SURVEY OF FRENCH LITERATURE. This course will outline the history of French literature from 1600 to present day, and is prerequisite for the courses devoted to special periods. Representative texts will be read. MR. BARTON, MR. SEARLES, MISS PHELPS.
- 50-51-52. ELEMENTARY FRENCH CONVERSATION. A small amount of outside preparation will be required. MR. FRELIN, MISS GUINOTTE.
- 53-54-55. ELEMENTARY FRENCH COMPOSITION. MR. FRELIN, MISS GUINOTTE.

Spanish

- 2-2. BEGINNING SPANISH. Pronunciation, grammar, oral exercises, and translation.
- 3-4. INTERMEDIATE SPANISH. Review of grammar, conversation, connected prose composition, and reading of representative authors.
20. ORAL AND WRITTEN SPANISH. Practical Spanish conversation and composition. MR. DRAKE.
- 50-51-52. SPANISH CONVERSATION. A small amount of outside preparation will be required. MR. HERAS.
- 53-54-55. SPANISH COMPOSITION. MR. HERAS.
- 65-66-67. SURVEY OF SPANISH LITERATURE. An outline of the history of Spanish literature from 1500 to the present day, based upon texts and collateral reading. Prerequisite for courses devoted to special periods. MR. HOUSE.

SOCIOLOGY AND SOCIAL WORK

COLLEGE OF SCIENCE, LITERATURE, AND THE ARTS

Professors LUTHER L. BERNARD, Acting Chairman; FRANK J. BRUNO; Associate Professor MANUEL C. ELMER; Assistant Professors ROSS L. FINNEY, GUSTAV A. LUNDQUIST; Instructors LOUIS A. BOETTIGER, CHARLES E. LIVELY.

COURSES

- INTRODUCTION TO SOCIOLOGY. A study of the origin and development of human societies; various agencies which have determined the type of social life; social organization, institutions, and progress; bearing of sociology upon other social sciences and arts. MR. BERNARD, MR. ELMER, MR. FINNEY, MR. LUNDQUIST, MR. BOETTIGER, MR. LIVELY.
6. MODERN SOCIAL REFORM MOVEMENTS. A survey of attempts to overcome certain social maladjustments: child labor, the city, bad housing, poverty, degeneracy; movements for public health, industrial democracy, social insurance, protection of infancy and youth, public recreation, etc. MR. ELMER, MR. FINNEY, MR. BOETTIGER, MR. LIVELY.

14. RURAL SOCIOLOGY. The background and evolution of country life; rural conveniences, communication, coöperation; rural social institutions, especially the family, school, church, and social center; rural leadership, surveys, organization, social agencies. Mr. BERNARD, Mr. LUNDQUIST, Mr. LIVELY.
114. RURAL SOCIAL INSTITUTIONS. A detailed study of the problems of organization and efficiency of selected rural institutions, especially religion, educational, civic, and recreational. Lectures, discussion, reports. Mr. LUNDQUIST.

SOILS

Professor FREDERICK J. ALWAY; Assistant Professor CLAYTON O. ROST;
Instructor PAUL R. McMILLER; Extension Specialist GEORGE H. NESOM.

COURSES

4. SOILS. Origin, formation, composition, and classification of soils; physical properties, moisture relations; principles of tillage. Lectures, laboratory and field work. Mr. ROST.
5. SOIL FERTILITY. Principles of soil fertility; soil organisms; use of lime, commercial fertilizers, stable manure, and green manures in relation to crop production. Lectures and laboratory work. Mr. ALWAY, Mr. ROST.
101. CHEMICAL ANALYSIS OF SOILS. A laboratory course on the chemical examination of soils, including both fusion and extraction methods for mineral nutrients. Mr. ROST.
102. SPECIAL PROBLEMS IN SOILS. Individual laboratory or field work upon some special soil problem in soil physics, soil chemistry, or soil management. Arrangement must be made in advance. Mr. ALWAY.
104. SOIL-SURVEYING. Field practice in surveying soils and the preparation of soil maps. Mr. McMILLER.
105. MINNESOTA SOILS. Detailed study of the soils of Minnesota. Origin, formation, and classification; physical and chemical characteristics; moisture relations; response to manures, fertilizers, and soil amendments; naturally unproductive types and their reclamation. Lectures and laboratory. Mr. ALWAY.
106. PEAT SOILS. Formation, chemical composition, physical properties, classification, and reclamation. Lectures, laboratory, and greenhouse work. Mr. ALWAY.
107. FERTILIZERS AND MANURES. Sources, composition, and uses of the various fertilizers, manures, and soil amendments. Lectures and laboratory work. Mr. ROST.

108. PHYSICAL PROPERTIES OF SOILS. A laboratory course on the determination of physical constants of soils, including mechanical composition, moisture equivalent, and hygroscopic coefficient. MR. McMILLER.

VETERINARY MEDICINE

ANIMAL INDUSTRY GROUP

Professors CLIFFORD P. FITCH, WILLARD L. BOYD, MYRON H. REYNOLDS;
Assistant Professor HOWARD C. H. KERNKAMP; Instructors WILLIAM
A. BILLINGS, EARL A. HEWITT.

COURSES

2. ANATOMY OF DOMESTIC ANIMALS. Anatomy of the common farm animals with special reference to bones, muscles, and viscera. Lectures and demonstrations. MR. KERNKAMP.
- 3-4. COMPARATIVE PHYSIOLOGY. A recitation and lecture course in physiology with special reference to the physiology of domesticated animals. Special emphasis is given to digestion and metabolism. MR. HEWITT.
6. PHYSIOLOGY AND HYGIENE OF BREEDING. Anatomy and physiology of reproduction. Embryology, obstetrics, sterility, hygiene, and common diseases of breeding animals. MR. BOYD.
8. VETERINARY STUDIES. Study of causes, prevention, treatment of common diseases; simple surgical operations; lameness and unsoundness; common medicines. Planned especially for students taking only one quarter veterinary work. Not open to those who have completed 12-13. MR. REYNOLDS.
12. INFECTIOUS DISEASES. Etiology, morbid anatomy, symptomatology, diagnosis, prevention, and the basis of treatment of the common infectious diseases of animals. Special instruction will be given in preparation and use of vaccines, bacterins, serums, and anti-toxins. Those who have completed Course 8 can obtain only half credit for this course. MR. FITCH, MR. BILLINGS.
13. NON-INFECTIOUS DISEASES. General principles of diagnosis, causes, morbid anatomy, symptomatology, prevention, and the basis of treatment of the non-infectious diseases of animals. Those who have completed Course 8 can obtain only half credit for this course. MR. BOYD.
- 101-102. ADVANCED ANATOMY OF DOMESTIC ANIMALS. Advanced study of the structures involved in the type, conformation, and nutrition of the common farm animals. Dissection of farm animals, including a study of the osseous, muscular, and other principal anatomical structures. Limited to nine students. MR. KERNKAMP.
- 103-104. ADVANCED COMPARATIVE PHYSIOLOGY. An advanced course in physiology of the domestic animals, including laboratory work with special emphasis on animal nutrition. MR. HEWITT.

COLLEGE OF AGRICULTURE, FORESTRY, AND
HOME ECONOMICS
TABULAR STATEMENT AND
PROGRAM OF COURSES
1921-1922

TABULAR STATEMENT AND PROGRAM OF COURSES

CLASS HOUR SCHEDULE

	University Farm	Minneapolis Campus
I Hr	7:45- 8:35	8:00- 8:50
II Hr	8:45- 9:35	9:00- 9:50
III Hr	9:45-10:35	10:00-10:50
IV Hr	10:45-11:35	11:00-11:50
V Hr	1:00- 1:50	1:00- 1:50
VI Hr	2:00- 2:50	2:00- 2:50
VII Hr	3:00- 3:50	3:00- 3:50
VIII Hr	4:00- 4:50	4:00- 4:50

Convocation—Thursdays, IV Hour, University Armory

Final examinations.—Final examinations will be given during the last four days of the quarter. A detailed schedule will be published in the *Official Daily Bulletin*.

CLASS SCHEDULE

Other schools and colleges.—For programs of classes given in other schools and colleges of the University, not listed below, send to the registrar, University of Minnesota, Minneapolis.

Abbreviations.—The following abbreviations are used to indicate names of buildings, those marked with an asterisk (*) are located on the Minneapolis campus; all others are at University Farm.

A, *Armory	Hr, Horticulture
AB, *Animal Biology	IA, *Institute of Anatomy
Ad, Administration	MA, *Mechanic Arts
BB, Beef Barn	ME, *Main Engineering
C, *Chemistry	MH, *Millard Hall
CB, *Christian Bible School	MS, Meat Shop
Ch, Agricultural Chemistry	Mu, *Music
DB, Dairy Barn	P, *Pillsbury Hall
DH, Dairy Hall	Ph, *Physics
DiH, Dining Hall	PHP, *Public Health and Pathology
Ed, *Education	PP, Plant Pathology
En, Agricultural Engineering	Psy, *Psychology
FH, Farm House	SS, Soil Survey
F, *Folwell Hall	St, Stock Pavilion
G, *Greenhouse	Ve, Veterinary
Gy, Gymnasium	WGm, *Woman's Gymnasium
HE, Home Economics	

Explanation of course numbers.—All undergraduate courses are numbered from 1 to 100. All courses open to undergraduates and graduates are numbered from 100 to 200. The letters f (fall), w (winter), and su (summer), indicate the quarters in which the course is offered. For example: 5f,w,s indicates that Course 5 is a one-quarter course given in the fall and repeated in the winter and again in the spring; 10f-11w-12s indicates that Course 10-11-12 is a three-quarter course running through three quarters; 25f,w-26w,s indicates a two-quarter course given in the fall and winter quarters and repeated in the winter and spring quarters.

PROGRAM, 1921-22

AGRICULTURAL BIOCHEMISTRY

No.	Title	Credits	Offered to	Prerequisite courses
2	Quantitative Methods.....	5	Jr., sr.	Chem. 10 cred.
3	Types of Carbon Compounds	6	Soph., jr., sr.	Chem. 10 cred.
7-8	General Agricultural Bio-chemistry	10	Soph., jr., sr.	Chem. 10 cred.
15	Principles of Animal Nutrition	3	Jr., sr.	7-8
101-102	Agricultural Quantitative Analysis	6	Jr., sr.	7-8
103	Dairy Chemistry.....	5	Jr., sr.	7-8
106	Chemical Technology of Agricultural Products....	5	Sr.	101-102
108	Chemistry of Wheat and Wheat Products.....	3	Jr., sr.	7-8
110	Flour Laboratory Methods..	5	Jr., sr.	101-102, or Chem. 131-132, parallel 108
111-112	Phytochemistry	6	Sr.	Biol. 9 cred., org. chem.
113-114	Biochemical Laboratory Methods	4	Sr.	Quant. anal., parallel 111-112
116	Chemistry of "Vitamines" and Deficiency Diseases...	3 or 5	Sr.	111-112, 113-114, or Physiol. 101-102, or 7-8 and 15
118	Laboratory Problems in Bio-chemistry	3 or 5	Sr.	111-112, 113-114; or 103 or 110

AGRICULTURAL ECONOMICS

See Economics page 93.

AGRICULTURAL EDUCATION

COLLEGE OF EDUCATION

No.	Title	Credits	Offered to	Prerequisite courses
11	Principles of Vocational Education	3	Jr., sr.‡	None
21	Vocational Education.....	3	Jr., sr.‡	None
41	Apprentice Teaching.....	2	Jr., sr.‡ ††	11, 131

‡ Offered only to those preparing to teach.

†† Students are admitted to this course only when approved by the Division of Agricultural Education.

AGRICULTURAL BIOCHEMISTRY

No.	Title	Hour	Day	Room	Instructor
2w	Quantitative Methods.....	V, VI, VII, VIII	MWF	7Ch	Mr. Willaman
3f,w†	Types of Carbon Compounds	I	MTWThFS	201Ch	Mr. Anderson
7f-8w	General Agricultural Bio-chemistry				
	Lect.	II	TThS	201Ch	Mr. Anderson
	Lab.	V, VI, VII	MW	203Ch	Mr. Anderson
7w-8s	General Agricultural Bio-chemistry				
	Lect.	III	TThS	201Ch	Mr. Anderson
	Lab.	V, VI, VII	MF	203Ch	Mr. Anderson
15f	Principles of Animal Nutri- tion	III	MWF	3St	Mr. Palmer
101ff-102w‡	Agricultural Quantitative Analysis	V, VI, VII	MWF	105Ch	Mr. Morrow
103s	Dairy Chemistry.....				
	Lect.	V	MWF	251Ch	Mr. Palmer
	Lab.	VI, VII, VIII	MWF	7Ch	Mr. Palmer
106f	Chemical Technology of Agri- cultural Products.....	Ar	Ar	Ar	Mr. Bailey
108s‡	Chemistry of Wheat and Wheat Products.....	I	MWF	201Ch	Mr. Bailey
110s‡	Flour Laboratory Methods..	V, VI, VII, VIII	MWF	7Ch	Mr. Bailey
111f†-112w‡	Phytochemistry	III	MWF	201Ch	Mr. Morrow
113f†-114w‡	Biochemical Laboratory Methods	V, VI, VII	TTh	7Ch	Mr. Morrow,
116f,w,s‡	Chemistry of "Vitamines" and Deficiency Diseases...	Ar	Ar	Ar	Mr. Sharp, Mr. Palmer, Miss Kennedy
118f,w,s‡	Laboratory Problems in Bio- chemistry	Ar	Ar	Ar	Ar

AGRICULTURAL ECONOMICS

See Economics, page 94.

AGRICULTURAL EDUCATION

COLLEGE OF EDUCATION

No.	Title	Hour	Day	Room	Instructor
11f,w	Principles of Vocational Education	II	TThS	1PP	Mr. Dyer
11s	Principles of Vocational Education	III	MWF	307Ad	Mr. Dyer
21f,w	Vocational Education.....	I	TThS	317Ad	Mr. Mayne
41f	Apprentice Teaching.....				
	Sec. 1	IV	MWF	317Ad	Mr. Field, Mr. Dyer
	2	Ar	Ar	Ar	Mr. Field, Mr. Dyer

† Offered also in the summer session.

‡ Offered also in the summer quarter (eleven weeks).

COURSES IN AGRICULTURE

No.	Title	Credits	Offered to	Prerequisite courses
42	Teaching	3	Sr.	41, Agron. 121, 122, 123
53	Consolidated Rural Schools..	3	All†	None
54	Rural Education and Com- munity Life.....	3	All	None
63-64-65	General Agriculture.....	9	All	None
75	Visual Presentation.....	3	Jr., sr.	11
81	Extension Work.....	3	Jr., sr.	6 cred. in farm mgt., 6 cred. in farm crops, 15 cred. in an. ind., 6 cred. in agr. educ.
82	Agricultural Extension Field Course	3-10	Jr., sr.	81¶
121	Teachers' Course Home and School Garden Supervision	2	Approval of division	
131	Methods in Teaching High- School Agriculture.....	5	Jr.,† sr.‡	11
151	Organization and Manage- ment	5	Sr.‡	11, 21
161-162-163	Fundamentals of Agriculture	9	Jr., sr.‡	None
164	Fundamentals of Agriculture	3	§	None
176	Advanced Visual Presentation	3	Jr., sr.	75
181	Agricultural Statistics and Graphic Representation....	3	Soph., jr., sr.	Farm Eng. 3, 11
191-192-193	Seminar in Agricultural Edu- cation	6	Sr.‡	11 cred. in agr. educ.

† Open to juniors on approval of the chief of the division.

‡ Offered only to those preparing to teach.

§ Special reduced courses for consolidated-school principals.

¶ Broad curriculum approved by the Agricultural Education Division and a position approved by the Agricultural Extension Division are also prerequisites to this course.

No.	Title	Hour	Day	Room	Instructor
41W	Apprentice Teaching..... Sec 1	II	MWF	317Ad	Mr. Field, Mr. Dyer
	2	Ar	Ar	Ar	Mr. Field, Mr. Dyer
41S	Apprentice Teaching.....	Ar	Ar	Ar	Mr. Field
42f,w†	Teaching Sec. 1	I	MWF	317Ad	Mr. Field
	2	Ar	Ar	Ar	Mr. Field
53s‡	Consolidated Rural Schools..	Ar	Ar	Ar	Mr. Dyer
54w‡	Rural Education and Com- munity Life.....	Ar	Ar	Ar	Mr. Dyer
63f-64w-65s	General Agriculture.....	Ar	Ar	Ar	Mr. Storm, Mr. Mayne, Mr. Field
75f,w	Visual Presentation.....	Ar	Ar	Ar	Ar
81s	Extension Work.....	II	TThS	Ar	Mr. Storm
82f,w,s‡	Agricultural Extension Field Course	Ar	Ar	Ar	Mr. Storm
121w	Teachers' Course, Home and School Gardening.....	Ar	Ar	Ar	Mr. Field
131f‡	Methods in Teaching High- School Agriculture.....	II	MTWFS	317Ad	Mr. Field
131s‡	Methods in Teaching High- School Agriculture.....	III	MTWFS	317Ad	Mr. Field
151f	Organization and Manage- ment	III	MTWThF	317Ad	Mr. Storm, Mr. Dyer
151S	Organization and Manage- ment	IV	MTWFS	317Ad	Mr. Storm, Mr. Dyer
161f-162w- 163s	Fundamentals of Agriculture	Ar	Ar	Ar	Mr. Storm
164w ‡	Fundamentals of Agriculture	Ar	Ar	Ar	Mr. Field
176s‡	Advanced Visual Presentation	Ar	Ar	Ar	Ar
181w	Agricultural Statistics and Graphic Representation....	Ar	Ar	Ar	Ar
191f-192w- 193s¶	Seminar in Agricultural Education	Ar	Ar	Ar	Mr. Storm

† It may be possible for a limited number to take this course in the spring quarter. Approval of the instructor and chief of division is required before registering.

‡ Offered also during the summer session.

¶ A continuation of this course, (194 su), carrying 2 credits is offered only during the summer session.

AGRONOMY AND FARM MANAGEMENT

No.	Title	Credits	Offered to	Prerequisite courses
1	Farm Crops.....	3	All	None
11	Farm Machinery.....	3	Jr., sr.	None
101	Farm Management I.....	3	Jr., sr.	1, Econ. 6
102	Farm Management II: Or- ganization	3	Sr.	1, Econ. 6, An. Husb. 6 or 8, Soils 5
103	Farm Management II: Op- eration	3	Sr.	102
104	Farm Management III.....	3	Sr.	101, 102
121	Cereal Crops.....	3	Jr., sr.	1, bot. 9 cred.
122	Corn and Potato Crops.....	3	Jr., sr.	1, bot. 9 cred.
123	Forage and Fiber Crops....	3	Jr., sr.	1, bot. 9 cred.
131	Principles of Genetics.....	3	Jr., sr.	Bot. 9 cred., an. biol. 9 cred.
132	Farm Crops Plant-Breeding..	3	Jr., sr.	131

ANIMAL BIOLOGY

COLLEGE OF SCIENCE, LITERATURE, AND THE ARTS

No.	Title	Credits	Offered to	Prerequisite courses
1-2	General Zoology.....	10†	All	None
9-10	Cytology and Technic.....	10†	Soph., jr., sr.	14-15-16
11	Cytology and Technic.....	5	All	14-15-16
14-15-16	General Zoology (Agr., For., and H. E.).....	9‡	All	None

† The full course must be completed before credit will be allowed.

‡ The full course must be completed before credit will be allowed except that students in home economics may receive credit for the first two quarters work when Botany 8 has also been satisfactorily completed.

AGRONOMY AND FARM MANAGEMENT

No.	Title	Hour	Day	Room	Instructor
1f,w,s†	Farm Crops.....	III, IV	MWF	2Ad	Mr. McGinnis, Mr. Steinmetz
11s	Farm Machinery.....	V, VI, VII	WF	BAd	Mr. Bassett
101s	Farm Management I.....	II	TThS	24Ad	Mr. Pond
102f	Farm Management II: Or- ganization	II	MWF	24Ad	Mr. Boss, Mr. Garey
102w†	Farm Management II: Or- ganization	I	MWF	24Ad	Mr. Boss, Mr. Garey
103w	Farm Management II: Opera- tion	II	MWF	24Ad	Mr. Boss, Mr. Garey
103s†	Farm Management II: Opera- tion	I	MWF	24Ad	Mr. Boss, Mr. Garey
104s	Farm Management III.....	II	MWF	24Ad	Mr. Boss
121f	Cereal Crops.....	V, VI, VII	TTh	2Ad	Mr. Army, Mr. McGinnis
122w	Corn and Potato Crops.....	V, VI, VII	TTh	2Ad	Mr. Army, Mr. McGinnis
123s	Forage and Fiber Crops.....	V, VI, VII	TTh	2Ad	Mr. Army, Mr. McGinnis
131f	Principles of Genetics.....	I	TThS	24Ad	Mr. Hayes
132s†	Farm Crops Plant-Breeding..	I	TThS	24Ad	Mr. Dorsey Mr. Hayes, Mr. Griffee

ANIMAL BIOLOGY

COLLEGE OF SCIENCE, LITERATURE, AND THE ARTS

No.	Title	Hour	Day	Room	Instructor
1f-2w*	General Zoology.....				
	Sec. 1 Lab.	III, IV	MWF	101AB	Ar
	Lect.	III	TThS		
		IV	T	313AB	Ar
	2 Lab.	V, VI, VII	TTh	101AB	Ar
	Lect.	V	MWF		
		VI	F	313AB	Ar
	3 Lab.	V, VI	MWF	101AB	Ar
	Lect.	V, VI	TTh	313AB	Ar
1w-2s*	General Zoology.....				
	Lab.	I, II	MWF	101AB	Ar
	Lect.	I	T		
		II	TThS	313AB	Ar
1s-2w*	General Zoology.....				
	Lab.	V, VI, VII	TTh	101AB	Ar
	Lect.	V	MWF		
		VI	F	313AB	Ar
9f-10w*	Cytology and Technic.....	III, IV	MTWFS	201,211AB	Mr. Downey
11s*	Cytology and Technic.....	III, IV	MTWFS	201,211AB	Mr. Nachtrieb
14f-15w-16s	General Zoology, (Agr., For., and H.E.).....	V, VI, VII	TTh	101,313AB	Ar

† Offered also in the summer session.

* Offered on the Minneapolis campus.

17-18	General Physiology.....	10†	Soph., jr., sr.	14 cred. or 9 cred. and chem. or phys. 10 cred.
23	Principles of Animal Behavior	3	All	14-15-16
37-38-39	General Entomology.....	9†	Soph., jr., sr.	14-15-16
43	Introductory Entomology....	5	All	14-15-16
44	Animal Parasites.....	3	All	14-15-16
46-47	Ornithology	6†	Soph., jr., sr.	14-15-16
48	General Ecology.....	5	All	14-15-16
107	Protozoology	3	Jr., sr.	14 cred. incl. 14- 15-16
109-110	General Physiology.....	10†	Jr., sr.	20 cred.
117-118-119	Ecology of Insects.....	9†	Jr., sr.	43
124	Advanced Ecology.....	5	Jr., sr.	117-118-119
125-126-127	Advanced Entomology.....	9†	Jr., sr.	37-38-39 or 43
130	Biology and Taxonomy of the Aphididae	3	Jr., sr.	19 cred. incl. 14- 15-16
139-140	Histology and Development of Insects.....	6†	Jr., sr.	37-38-39 or 43
144-145-146	Animal Parasites and Para- sitism	9	Jr., sr.	37-38-39 or 43
181-182	Embryology	6	Jr., sr.	11 or equiv.
183	Genetics and Eugenics.....	3	Jr., sr.	14-15-16, 5 cred. in an. biol. or bot.

For additional courses, see the bulletin of the College of Science, Literature, and the Arts.

ANTHROPOLOGY AND AMERICANIZATION TRAINING

COLLEGE OF SCIENCE, LITERATURE, AND THE ARTS

No.	Title	Credits	Offered to	Prerequisite courses
1	Introduction to Anthropology	5	3d qu. fr., Soph., jr., sr.	None
4	Cultural Anthropology.....	3	Soph., jr., sr.	1
5	General Immigration.....	3	Soph., jr., sr.	1
12	Ethnology	3	Soph., jr., sr.	1
110	Physical Anthropology and Amalgamation	3	Jr., sr.	1, an. biol. 9 cred.
113	The American People, Older Immigrants	3	Jr., sr.	3 courses
114	The American People, Newer Immigrants	3	Jr., sr.	3 courses
115	The American People, Ameri- canisms and Assimilation..	3	Jr., sr.	3 courses

For additional courses, see the bulletin of the College of Science, Literature, and the Arts.

† The full course must be completed before credit will be allowed.

17f-18w*	General Physiology.....	V, VI, VII V, VI, VII, VIII	MW F	10AB	Mr. Lund
23s*	Principles of Animal Behavior	V, VI, VII	TTh	10AB	Mr. Lund
37f-38w-39s*	General Entomology.....	I, II	MWF	208,10AB	Mr. Oestlund
43s*	Introductory Entomology....	I, II	MWThFS	208,10AB	Mr. Oestlund
44f*	Animal Parasites.....	V, VI	MWF	208,10AB	Mr. Riley
44s*	Animal Parasites.....	V, VI, VII	WF	208,10AB	Mr. Riley
46w-47s*	Ornithology*	V, VI, VII	TTh	211,314AB	Mr. Roberts
48s*	General Ecology.....	V, VI, VII, VIII	MW F	208,10AB	Mr. Chapman
107s*	Protozoology	I, II	MWF	211,213AB	Mr. Sigerfoos
109f-110w*	General Physiology.....	V, VI, VII V, VI, VII, VIII	MW F	10AB	Mr. Lund
117f-118w- 119s*	Ecology of Insects.....	V, VI, VII	TTh	208,10AB	Mr. Chapman
124†*	Advanced Ecology.....	Ar	Ar	Ar	Ar
125f-126w- 127s*	Advanced Entomology.....	III, IV	TThS	208,10AB	Mr. Oestlund
130w*	Biology and Taxonomy of the Aphididae	III, IV	MWF	208,10AB	Mr. Oestlund
139f-140w	Histology and Development of Insects.....	II, III, IV	TTh	324Ad	Mr. Riley
144f-145w- 146s*	Animal Parasites and Para- sitism	V, VI, VII	WF	208,10AB	Mr. Riley
181f-182w*	Embryology	V, VI	MWF	201,211AB	Mr. Nachtrieb
183s*	Genetics and Eugenics.....	III	MWF	211AB	Mr. Nachtrieb

ANTHROPOLOGY AND AMERICANIZATION TRAINING

COLLEGE OF SCIENCE, LITERATURE, AND THE ARTS

No.	Title	Hour	Day	Room	Instructor
1f*	Introduction to Anthropology				
	Sec. 1	II	MWThFS	15F	Mr. Jenks
	2	V	MTWThF	15F	Mr. Grace
1w*	Introduction to Anthropology	V	MTWThF	15F	Mr. Grace
1s*	Introduction to Anthropology				
	Sec. 1	II	MWThFS	15F	Mr. Grace
	2	V	MTWThF	25F	Mr. Grace
4w*	Cultural Anthropology.....	II	MWF	25F	Mr. Jenks
5f,w,s*	General Immigration.....	III	TThS	15F	Mr. Grace
12f*	Ethnology	II	TThS	12F	Miss Speaker
12w*	Ethnology	III	MWF	25F	Mr. Grace
12s*	Ethnology	II	TThS	25F	Miss Speaker
110s*	Physical Anthropology and Amalgamation	II	MWF	25F	Mr. Jenks
113f*	The Older Immigrants.....	III	MWF	15F	Mr. Jenks
114w*	The Newer Immigrants.....	III	MWF	15F	Mr. Jenks
115s*	Americanisms and Assimila- tion	III	MWF	15F	Mr. Jenks

* Offered on the Minneapolis campus.

† Offered in the summer session.

COURSES IN AGRICULTURE

ANIMAL HUSBANDRY
ANIMAL INDUSTRY GROUP

No.	Title	Credits	Offered to	Prerequisite courses
1	Types and Breeds of Live- stock	5	All	None
2	Livestock-Judging	3	Soph., jr., sr.	1
3	Market Classes of Livestock	6	Jr., sr.	2†
5	Livestock-Breeding	3	Jr., sr.	Agron. 131
6	Livestock-Feeding	5	Jr., sr.	Agr. Biochem. 15
7	Meats	3	Sr.	2, Agr. Biochem. 15
8	Fundamentals of Feeding....	3	Jr., sr.	Agr. Biochem. 15
9	Pedigrees and Herd Books..	3	Jr., sr.	5
101	Advanced Stock-Judging.....	3	Sr.	2, 3-4
102	Horse Husbandry.....	3	Jr., sr.	2, 3-4, 5, 6
103	Beef-Cattle Husbandry.....	3	Jr., sr.	2, 3-4, 5, 6
104	Sheep Husbandry.....	3	Jr., sr.	2, 3-4, 5, 6
105	Swine Husbandry.....	3	Jr., sr.	2, 3-4, 5, 6
106	Advanced Meats.....	3	Jr., sr.	7
107	Meat Problems.....	3	Sr.	106
108	Seminar	3	Sr.	5, 6

ART EDUCATION
COLLEGE OF EDUCATION

No.	Title	Credits	Offered to	Prerequisite courses
29-30-31††	Fundamental Principles of Design	9	All	None
32-33-34	Freehand Drawing and Com- position	9‡	All	None
	A Still Life, B Composition, and C Sketch			
40-41-42	Principles of Harmony in Form and Color.....	9	Soph., jr., sr.	29-30-31 or in- structor's per- mission

For additional courses see the bulletin of the College of Education.

‡ Three one-unit courses each term which may be registered for separately.

† No prerequisite except for students who take courses in this division in addition to 1 and 3.

†† Home economics students who have completed H. E. 51 and 53 will be admitted to the last quarter's work.

ANIMAL HUSBANDRY

ANIMAL INDUSTRY GROUP

No.	Title	Hour	Day	Room	Instructor
1f,w	Types and Breeds and Live-stock	I, II	MTWFS	CSt	Mr. Carnes
2f	Livestock-Judging	III, IV	MWF	CSt	Mr. Anderson
3f-4w	Market Classes of Livestock				
	Lect.	I	M	WSt	Mr. Ferrin
	Lab.	I, II	WF	WSt	Mr. Ferrin
5w	Livestock-Breeding	IV	MWF	3St	Mr. Peters
6w	Livestock-Feeding	III	MTWFS	3St	Mr. Ferrin
7f	Meats	V, VI, VII	TTh	MS	Mr. Anderson
8s	Fundamentals of Feeding....	I	TThS	3St	Mr. Harvey, Mr. Rayburn
9s	Pedigrees and Herd Books..	II	TThS	3St	Mr. Ferrin
101f	Advanced Stock-Judging....	VI, VII	MWF	CSt	Mr. Ferrin
102S	Horse Husbandry.....				
	Lect.	II	TTh	WSt	Mr. Peters
	Lab.	V, VI, VII	F	CSt	Mr. Peters
103S	Beef-Cattle Husbandry.....				
	Lect.	III	MW	3St	Mr. Carnes
	Lab.	V, VI, VII	T	BB	Mr. Carnes
104S	Sheep Husbandry.....				
	Lect.	IV	WF	3St	Mr. Anderson
	Lab.	V, VI, VII	M	CSt	Mr. Anderson
105S	Swine Husbandry.....				
	Lect.	III	TS	3St	Mr. Ferrin
	Lab.	V, VI, VII	Th	CSt	Mr. Ferrin
106w	Advanced Meats.....	V, VI, VII	WF	MS	Mr. Anderson
107S	Meat Problems.....				
	Lect.	IV	TS	MS	Mr. Anderson
	Lab.	V, VI, VII	W	MS	Mr. Anderson
108S	Seminar	II	MWF	3St	Mr. Peters

ART EDUCATION

COLLEGE OF EDUCATION

No.	Title	Hour	Day	Room	Instructor
29f-30w-31s*	Fundamental Principles of Design				
	Lect.	III	TThS	401,404F	Miss Raymond
	Sec. 1 Lab.	II	TThS	401,404F	Miss Raymond
	2	IV	TThS	401,404F	Miss Raymond
32f-33w-34s*	Freehand Drawing and Composition				
	Comp.	II	W	401,404F	Miss Raymond
	Sketch	III	F	401,404F	Miss Raymond
	Sec. 1 Lab.	I	MWF	401,404F	Miss Raymond
	2	IV	MWF	401,404F	Miss Raymond
40f-41w-42s*	Principles of Harmony in Form and Color.....				
	Lect.	II	TThS	406F	Miss Raymond
	Sec. 1 Lab.	I	TThS	406F	Miss Raymond
	2	III	TThS	406F	Miss Raymond

* Offered on the Minneapolis campus.

BACTERIOLOGY AND IMMUNOLOGY

MEDICAL SCHOOL

No.	Title	Credits	Offered to	Prerequisite courses
1	General Bacteriology.....	5	Soph., jr., sr.	Chem. 10 cred.
103	Special Bacteriology for Students of Agriculture...	4	Jr., sr.	1
105	Household Bacteriology.....	3	Jr., sr.	1

For additional courses see the bulletin of the Medical School.

BEE CULTURE

No.	Title	Credits	Offered to	Prerequisite courses
1	Elements of Beekeeping I...	3	All	None
2	Elements of Beekeeping II..	3	All	None
3	Advanced Beekeeping I....	3	Soph., jr., sr.	1, 2
4	Advanced Beekeeping II....	3	Soph., jr., sr.	1, 2
5	Queen-Raising	3	Jr., sr.	3, 4

BOTANY

COLLEGE OF SCIENCE, LITERATURE, AND THE ARTS

No.	Title	Credits	Offered to	Prerequisite courses
1-2	General Botany.....	10†	All	None

† The full course must be completed before credit will be allowed.

BACTERIOLOGY AND IMMUNOLOGY

MEDICAL SCHOOL

No.	Title	Hour	Day	Room	Instructor
1f-w-s*†	General Bacteriology.....	V, VI, VII	MWF	MH	Ar
103w*	Special Bacteriology for Students of Agriculture...	III, IV IV	TS Th	MH	Ar
105f*	Household Bacteriology.....	VI, VII	TTh	MH	Ar

BEE CULTURE

No.	Title	Hour	Day	Room	Instructor
1f,w,s†	Elements of Beekeeping I..				
	Sec. 1 Lect.	III	TThS	FH	Mr. Jager
	Lab.	Ar	Ar	FH	Mr. Jager
	2 Lect.	III	MWF	FH	Mr. Jager
	Lab.	Ar	Ar	FH	Mr. Jager
2f,w,s†	Elements of Beekeeping II..				
	Sec. 1 Lect.	IV	MW	FH	Mr. Jager
	Lab.	Ar	Ar	FH	Mr. Jager
	2 Lect.	IV	TS	FH	Mr. Jager
	Lab.	Ar	Ar	FH	Mr. Jager
3f,w	Advanced Beekeeping I....				
	Lect.	V	TTh	FH	Mr. Jager
	Lab.	Ar	Ar	FH	Mr. Jager
4w,s	Advanced Beekeeping II....				
	Lect.	VI	TTh	FH	Mr. Jager
	Lab.	Ar	Ar	FH	Mr. Jager
5†	Queen-Raising				Mr. Jager

BOTANY

COLLEGE OF SCIENCE, LITERATURE, AND THE ARTS

No.	Title	Hour	Day	Room	Instructor
1f-2w*	General Botany.....				Mr. Durand in charge
	Sec. 1 Lab.	I, II	MWF	212-214-220P	
	Quiz	I	T	212-214-220P	
	Lect.	II	TThS	210P	
	2 Lab.	III, IV	MWF	212-214-220P	
	Quiz	IV	T	212-214-220P	
	Lect.	III	TThS	210P	
		III, IV	S	210P	
	3 Lab.	V, VI	MWF	212-214-220P	
	Quiz	V	Th	210P	
	Lect.	V, VI	T	210P	
		VI	Th	210P	

*Offered on the Minneapolis campus.

† Offered also in the summer session.

‡ Offered only in the summer session.

No.	Title	Credits	Offered to	Prerequisite courses
4-5-6	General Botany for Agriculture and Forestry Students	9†	All	None
7	Taxonomy of Flowering Plants	5	All	2, 6, or 8
8	General Botany for Home Economics Students.....	5	All	None
11	Algae and Fungi.....	5	Soph., jr., sr.	2, 6, or 8
15	Anatomy of Vascular Plants	5	Soph., jr., sr.	2, 6, or 8
20	Forest Ecology.....	3	Soph., jr., sr.	14 cred., for. 4 cred.
51	Histological Methods.....	3	Jr., sr.	14 cred.
52	Plant Physiology.....	5	Jr., sr.	14 cred.
53	Botany of Economic Plants..	5	Jr., sr.	14 cred.
54	Elementary Ecology.....	5	Jr., sr.	14 cred.
55	Algae	5	Jr., sr.	14 cred.
62	Bryophytes and Pteridophytes	5	Jr., sr.	14 cred.
63	Angiosperms and Gymnosperms	5	Jr., sr.	7 or 62
107	Bryophytes	5	Sr.	7, 62
108	Pteridophytes	5	Sr.	7, 62
110	Gymnosperms	5	Sr.	7, 63
113-114-115	Advanced Taxonomy.....	9	Jr., sr.	7
118-119	Cytology	6†	Jr., sr.	51
131	Field Ecology.....	5	Sr.	54
133	Forest Geography of North America	5	St.	54
141	Physical Phases of Plant Physiology	5	Sr.	52, org. chem.
142	Plant Metabolism.....	5	Sr.	52, org. chem.
143	Plant Metabolism and Growth	5	Sr.	52, org. chem.
144	Plant Microchemistry.....	5	Sr.	52, org. chem.

For additional courses, see the bulletin of the College of Science, Literature, and the Arts.

† The full course must be completed before credit will be allowed.

No.	Title	Hour	Day	Room	Instructor
1s-2f*	General Botany.....				Mr. Durand in charge
	Lab.	I, II	TThS	212-214-220P	
	Quiz	I	W	210P	
	Lect.	II	MWF	210P	
4f-5w-6s *	General Botany (Agr. and For.)				Mr. Durand
	Lect.	VII	TTh	210P	
	Lab.	V, VI	TTh	212-214-220P	
7s*	Taxonomy of Flowering Plants				Mr. Rosendahl in charge
	Lab.	V, VI	MWF	212-214P	
	Quiz	VI	Th	210P	
	Lect.	V	TTh	210P	
8s*	General Botany (Home Econ.)				Mr. Durand
	Lect.	II	TThS	210P	
	Lab.	I, II	MWF	212-214-220P	
11f*	Algae and Fungi.....	I, II	TWThFS	10AB	Mr. Johnson
15w *	Anatomy of Vascular Plants	III, IV	MTWFS	202AB	Mr. Butters
20f*	Forest Ecology.....	Ar	Ar	Ar	Ar
51f*	Histological Methods.....	I, II	MWF	202AB	Mr. Rosendahl
52f*	Plant Physiology.....	III, IV	MTWFS	G	Mr. Knight
53w*	Botany of Economic Plants..	III, IV	MTWFS	G	Mr. Knight
54s*	Elementary Ecology.....	III, IV	MTWFS	G	Mr. Cooper
55s*	Algae	III, IV	MTWFS	10AB	Miss Tilden
62w*	Bryophytes and Pteridophytes	I, II	TWThFS	202AB	Mr. Huff
63s*	Gymnosperms and Angiosperms	I, II	TWThFS	202AB	Mr. Butters
107w*	Bryophytes	Ar	Ar	Ar	Mr. Durand
108w*	Pteridophytes	Ar	Ar	Ar	Mr. Butters
110w*	Gymnosperms	Ar	Ar	Ar	Mr. Butters
113f-114w-115s*	Advanced Taxonomy.....	V, VI	MWF	202AB	Mr. Rosendahl
118w-119s*	Cytology	I, II	MWF	202AB	Mr. Rosendahl
131f*	Field Ecology.....	Ar	Ar	Ar	Mr. Cooper
133s*	Forest Geography of North America	V, VI	MWF	G	Mr. Cooper
141f*	Physical Phases of Plant Physiology	I, II	TWThFS	G	Mr. Knight, Mr. Harvey
142w*	Plant Metabolism.....	I, II	TWThFS	G	Mr. Knight, Mr. Harvey
143s*	Plant Metabolism and Growth	I, II	TWThFS	G	Mr. Knight, Mr. Harvey
144s*	Plant Microchemistry.....	Ar	Ar	G	Mr. Harvey

* Offered on the Minneapolis campus.

CHEMISTRY

SCHOOL OF CHEMISTRY

No.	Title	Credits	Offered to	Prerequisite courses
1-2-3	General Inorganic Chemistry	12†	All	None
9-10	General Inorganic Chemistry	10†	All	H.-s. chem.
11	Qualitative Chemical Analysis	4	Soph., jr., sr.	1-2-3
12-13	Qualitative Chemical Analysis	10†	Soph., jr., sr.	9-10
20-21	Quantitative Analysis.....	10	Soph., jr., sr.	12-13
35-36	Organic Chemistry.....	10†	Jr., sr.	15 cred. in chem.
126	Sanitary Water Analysis....	1 or 2	Jr., sr.	21
140-141‡-142	Physical Chemistry.....	9, 12, or 15	Jr., sr.	2 yrs. chem., 1 yr. phys.

For additional courses see the bulletin of the School of Chemistry.

† The full course must be completed before credit will be allowed.

‡ The first two quarters must be completed before credit is allowed.

CHEMISTRY
SCHOOL OF CHEMISTRY

No.	Title	Hour	Day	Room	Instructor
1f-2w*	General Inorganic Chemistry				
	Lect.	VI	MWF	100C	Mr. Sneed
	Lab.	VII, VIII	MW	210C	Mr. Sneed
3s*	General Inorganic Chemistry				
	Lect.	VI	MF	100C	Mr. Sneed
		IV	S	100C	Mr. Sneed
	Lab.	VII, VIII	MF	210C	Mr. Sneed
9f-10w*	General Inorganic Chemistry				
	Lect.	VI	MWF	100C	Mr. Sneed
	Lab.	VII, VIII	MWF	210C	Mr. Sneed
11f*	Qualitative Chemical Analysis				
	Lect.	IV	MWF	225C	Miss Cohen
	Lab.	V, VI	MW	210C	Miss Cohen
11s*	Qualitative Chemical Analysis				
	Lect.	V	MWF	100C	Mr. Henderson, Mr. Fosse
	Lab.	V, VI or VII, VIII	TTh TTh	210C 210C	
12s*	Qualitative Chemical Analysis				
	Lect.	II	MWF	100C	Mr. Sneed
	Lab.	I, II, III	ThS	210C	Mr. Sneed
12f-13w*	Qualitative Chemical Analysis				
	Lect.	II	TThS	Ar	Ar
	Lab.	V, VI, VII	MW	Ar	Ar
13f*	Qualitative Chemical Analysis				
	Lect.	II	TThS	325C	Mr. Sneed
	Lab.	V, VI, VII	MW	210C	Mr. Sneed
20w-21s*	Quantitative Analysis.....				
	Lect.	V	M	325C	Mr. Geiger
	Rec.	V	F	315C	Mr. Geiger
	Lab.	VI-VIII	MF	310C	Mr. Sidener, Mr. Geiger
		V-VIII	W	310C	Mr. Sidener, Mr. Geiger
35f-36w*	Organic Chemistry.....				
	Lect.	III	MWF	325C	Mr. Hunter
	Lab.	V-VII	TTh	10C	Mr. Hunter, Mr. Lauer
126s*	Sanitary Water Analysis....				
	Lect.	V	T	315C	Mr. Sidener
	Lab.	VI-VII	T	310C	Mr. Sidener, Mr. Geiger
	Lab.	V-VII	Th	310C	Mr. Sidener, Mr. Geiger
140f-141w- 142s*	Physical Chemistry.....				
	Lect.	IV	MWF	325C	Mr. MacDougall
	Lab.	V-VII	F	117C	Mr. MacDougall
	Rec.	IV	S	115C	Ar

* Offered on the Minneapolis campus.

COURSES IN AGRICULTURE

DAIRY HUSBANDRY
ANIMAL INDUSTRY GROUP

No.	Title	Credits	Offered to	Prerequisite courses
1	Elements of Dairying.....	5	All	None
2	Dairy Bacteriology.....	5	Soph., jr., sr.	Bact. 1
3	Dairy Products.....	5	Jr., sr.	1, 2
4	Cheese-Factory Practice.....	3	Jr., sr.	1, 3
5	Creamery Practice.....	3	Jr., sr.	1, 3
101	Milk Production.....	5	Jr., sr.	1
102	Market Milk.....	3	Jr., sr.	1, 2
103	Dairy-Stock Feeding.....	3	Sr.	101, Agr. Biochem. 15
104	Advanced Study of Dairy			
	Breeds	3	Jr., sr.	101
105	Seminar I.....	1	Sr.	3 courses in dy. husb.
106	Seminar II.....	1	Sr.	3 courses in dy. husb.
107	Seminar III.....	1	Sr.	3 courses in dy. husb.

ECONOMICS
SCHOOL OF BUSINESS

No.	Title	Credits	Offered to	Prerequisite courses
5	General Economics.....	5	Soph., jr., sr.	None
6	Agricultural Economics.....	3	Soph., jr., sr.	3-4, or 5
13	Agricultural Statistics.....	5	Soph., jr., sr.	3-4, or 5
20	Economic Geography of Agriculture	5	All	None
21	Economic History of Agriculture	5	All	None

DAIRY HUSBANDRY ANIMAL INDUSTRY GROUP

No.	Title	Hour	Day	Room	Instructor
1f,w,s	Elements of Dairying..... (Limited to 50)				
	Lect.	III	TWS	39DH	Mr. Keithley
	Lab.	III, IV	MF	Lab.DH	Mr. Dahle, Mr. Anderson
2w	Dairy Bacteriology..... (Limited to 12)				
	Lect.	IV	TS	40DH	Mr. Macy
	Lab.	V, VI	MWF	30DH	Mr. Macy
3f	Dairy Products.....				
	Lect. °	IV	MWF	39DH	Mr. Keithley
	Lab.	V, VI	WF	Lab.DH	Mr. Dahle
4†	Cheese-Factory Practice.....	....	....	....	Mr. Keithley
5†	Creamery Practice.....	....	....	....	Mr. Keithley
101f	Milk Production.....				
	Lect.	IV	MTWF	40DH	Mr. Eckles
	Lab.	V, VI, VII	Th	Ar	Mr. Rayburn
102s	Market Milk.....	VI, VII	MWF	39DH	Mr. Keithley, Mr. Macy
103w	Dairy-Stock Feeding.....	III	MWF	30DH	Mr. Eckles
104s	Advanced Study of Dairy Breeds				
	Lect.	III	S	40DH	Mr. Rayburn
	Lab.	V, VI	TTh	40DH	Mr. Rayburn
105f	Seminar I.....	II	S	30DH	Mr. Eckles
106w	Seminar II.....	II	S	30DH	Mr. Eckles
107s	Seminar III.....	II	S	30DH	Mr. Eckles

ECONOMICS SCHOOL OF BUSINESS

No.	Title	Hour	Day	Room	Instructor
5f,w,‡	General Economics (Agriculture and Forestry).....				
	Sec. 1	I	MWThFS	106En	Ar
	2	III	MTWFS	4PP	Ar
5w,s	General Economics (Home Economics)	II	MTWThF	203HE	Ar
6f,w,s,‡	Agricultural Economics.....				
	Sec. 1	I	TThS	1PP	Ar
	2	II	TThS	307Ad	Ar
13f	Agricultural Statistics.....				
	Lect.	III	TThS	307Ad	Mr. Working
	Lab.	V, VI	TTh	307Ad	Mr. Working
20f	Economic Geography of Agriculture	IV	MTWFS	307Ad	Mr. Holmes
21w	Economic History of Agriculture	IV	MTWFS	307Ad	Ar

† Offered only in the summer session.

‡ Offered also in the summer session.

COURSES IN AGRICULTURE

No.	Title	Credits	Offered to	Prerequisite courses
25-26	Principles of Accounting....	8‡	Soph., jr., sr.	3-4, 5, or parallel
28	Principles of Accounting (for Agr., For., and H.E.).....	5	Soph., jr., sr.	3-4, or 5
50	Farm Finance.....	3	Jr., sr.	3-4, or 5 and 6
73	Railway Traffic and Rates..	3	Jr., sr.	3-4, or 5 and 6
85	Principles of Marketing.....	3	Jr., sr.	3-4, or 5 and 6
88	Advertising and Selling.....	3	Jr., sr.	85, Psychol. 156
90	Economics of Consumption..	3	Jr., sr.	3-4, or 5 and 6
91	Principles of Organization and Management.....	3	Soph., jr., sr.	3-4, or 5

‡ The full course must be completed before credit will be allowed.

No.	Title	Hour	Day	Room	Instructor
25f-26w*	Principles of Accounting....				Mr. Heilman in charge
	Sec. 1	I	MWF	301MA	
	2	II	MWF	301MA	
	3	II	MWF	303MA	
	4	III	MWF	301MA	
	5	IV	MWF	301MA	
	6	V	MWF	301MA	
	7	I	TThS	301MA	
	8	II	TThS	301MA	
	9	III	TThS	301MA	
	10	VI	MWF	209MA	
25f-26w*	Accounting Laboratory (to be given with Principles of Accounting).....				Mr. Heilman in charge
	Sec. 1	V, VI	M	303MA	
	2	VI, VII	M	301MA	
	3	III, IV	T	303MA	
	4	I, II	T	303MA	
	5	VI, VII	T	301MA	
	6	VII, VIII	T	303MA	
	7	V, VI	W	303MA	
	8	VI, VII	W	301MA	
	9	II, III	Th	303MA	
	10	VI, VII	Th	301MA	
	11	V, VI	Th	303MA	
	12	VII, VIII	Th	303MA	
	13	V, VI	F	303MA	
	14	VI, VII	F	301MA	
	15	III, IV	F	303MA	
	16	III, IV	S	303MA	
	17	I, II	S	303MA	
	18	VII, VIII	W	303MA	
25w-26s*	Principles of Accounting....				
	Sec. 1	III	MWF	102MA	Mr. Heilman
	2	I	TThS	107F	Mr. Heilman
25w-26s*	Accounting Laboratory.....				Mr. Heilman in charge
	Sec. 1	V, VI	T	303MA	
	2	III, IV	W	303MA	
	3	VII, VIII	M	303MA	
28s	Principles of Accounting.... (Agr., For., and H.E.)				
	Lect.	III MWF and VI	Th	24Ad	Mr. Heilman, Mr. Chapman
	Lab.	VII, VIII	Th	24Ad	Mr. Heilman, Mr. Chapman
50s	Farm Finance.....	II	MWF	307Ad	Mr. Dowrie
73w*	Railway Traffic and Rates...	V	MWF	202MA	Mr. Cummings
85f,s	Principles of Marketing....	II	TThS	4PP	Mr. Anderson
88s*	Advertising and Selling....	I	TThS	202MA	Mr. Pelz
90s	Economics of Consumption..	IV	MWF	307Ad	Mr. Garver
91w	Principles of Organization and Management.....	I	TThS	202MA	Mr. Pelz

* Offered on the Minneapolis campus.

No.	Title	Credits	Offered to	Prerequisite courses
94	Office Management.....	3	Jr., sr.	3-4, or 5 and 6
103-104	Value and Distribution.....	6‡	Jr., sr.	3-4, or 5 and 6
106	Land Economics.....	3	Jr., sr.	See footnote†
107	Land Tenure.....	3	Jr., sr.	106
108	Marketing of Farm Products	3	Jr., sr.	85
110-111	Practice Course in Marketing	3	Jr., sr.	85
112	Business Statistics.....	3	Jr., sr.	13 or 14
116	Economics of Agricultural Production	3	Jr., sr.	See footnote†
117	Prices of Farm Products....	3	Jr., sr.	See footnote†
126	Principles of Coöperation...	3	Jr., sr.	85 or see footnote†
127-128	Marketing Organization and Management	6	Jr., sr.	85, 25-26 or 28
131-132-133	Cost Accounting.....	3	Jr., sr.	25-26
143-144	Money and Banking.....	8‡	Jr., sr.	3-4, or 5 and 6
145	International Exchange.....	3	Jr., sr.	143-144
149	Business Cycles.....	3	Sr.	143-144
176	Commercial Policies.....	3	Jr., sr.	3-4, or 5 and 6
177	Foreign Trade.....	3	Jr., sr.	176
180-181-182	Senior Seminar in Economics	9	Sr.	See footnote†
191-192	Public Finance.....	6‡	Jr., sr.	3-4, or 5 and 6
193	State and Local Taxation...	3	Jr., sr.	191-192

For additional courses, see bulletin of the School of Business

EDUCATIONAL ADMINISTRATION AND SUPERVISION

COLLEGE OF EDUCATION

No.	Title	Credits	Offered to	Prerequisite courses
3	Educational Sociology.....	3	Jr., sr.	Psychol. 6 cred.
5	Public Education in the United States.....	3	Jr., sr.	Psychol. 6 cred.
119	The Elementary-School Cur- riculum	3	Sr.	1 or 101-102-103, 3

For additional courses see the bulletin of the College of Education.

† Senior rank, or 13 credits in economics and farm management, and 5 credits in other social sciences (political science, sociology, or history).

‡ The full course must be completed before credit will be allowed.

No.	Title	Hour	Day	Room	Instructor
94f*	Office Management.....				Miss Sykes
	Rec.	V	Th	102MA	
	Lab. Sec. 1	V, VI	M	104, 106MA	
	2	V, VI	W	104, 106MA	
103f-104w*	Value and Distribution.....	VI	MWF	102MA	Mr. Garver
106w	Land Economics.....	VI	MWF	307Ad	Mr. Black
106s*	Land Economics.....				
	See School of Business program				
107s	Land Tenure.....	VI	MWF	307Ad	Mr. Black
108w	Marketing of Farm Products	VI, VII	T	323Ad	Mr. Black
110s-111f	Practice Course in Marketing	Ar	Ar	Ar	Mr. Black, Mr. Anderson
112f*	Business Statistics.....	II	TThS	202MA	Mr. Mudgett
116f,w	Economics of Agricultural Production	II	TThS	24Ad	Mr. Holmes
117w	Prices of Farm Products....	II	TThS	4PP	Mr. Working
126f*	Principles of Coöperation...	Ar	Ar	Ar	Mr. Black, Mr. Miller
127w-128s	Marketing Organization and Management	Ar	Ar	Ar	Ar
131f-132w- 133s*	Cost Accounting.....	II	TThS	109MA	Mr. Noble
143f-144w*	Money and Banking.....				
	Lect.	IV	T		Mr. Dowrie, Mr. Ebersole, Mr. Stehman
	Sec. 1	II	TThS	302D	
	2	III	MWF	209MA	
	3	II	MWF	102MA	
	4	VII	MTW	209MA	
	5	V	MWF	102MA	
	6	III	TThS	209MA	
145s*	International Exchange.....	II	TThS	102MA	Mr. Dowrie
149s*	Business Cycles.....	VIII	MTW	209MA	Mr. Ebersole
176f*	Commercial Policies.....	I	MWF	202MA	Mr. Blakey
177w*	Foreign Trade.....	I	MWF	202MA	Mr. Blakey
180f-181w- 182s	Senior Seminar in Economics	Ar	Ar	Ar	Ar
191f-192w*	Public Finance.....	III	MWF	209MA	Mr. Blakey
193s*	State and Local Taxation...	III	MWF	209MA	Mr. Blakey

EDUCATIONAL ADMINISTRATION AND SUPERVISION

COLLEGE OF EDUCATION

No.	Title	Hour	Day	Room	Instructor
3f*	Educational Sociology.....				
	Sec. 1	II	MWF	205Ed	Mr. Finney
	2	III	MWF	205Ed	Mr. Finney
3w,s*	Educational Sociology.....	III	MWF	205Ed	Mr. Finney
5w*	Public Education in the United States.....	VI	MWF	102Ed	Mr. Swift
5s	Public Education in the United States.....	VI	MWF	317Ad	Miss Alexander
119w*	The Elementary School Cur- riculum	VII	MWF	102Ed	

* Offered on the Minneapolis campus.

EDUCATIONAL PSYCHOLOGY

COLLEGE OF EDUCATION

No.	Title	Credits	Offered to	Prerequisite courses
45	Elementary Educational Psychology	3	Soph., jr., sr.	Psychol. 6 cred.
106-107-108	Advanced Educational Psychology	9	Jr., sr.	45 or equiv.
111	Educational Diagnosis.....	3	Jr., sr.	45 or equiv.

For additional courses see the bulletin of the College of Education.

ENGLISH

COLLEGE OF SCIENCE, LITERATURE, AND THE ARTS

No.	Title	Credits	Offered to	Prerequisite courses
1-2-3	General Survey of English Literature	9	Soph., jr., sr.	Rhet. 1-2-3
4	Old English.....	4	Soph., jr., sr.	1-2-3 or parallel
6	Chaucer	4	Soph., jr., sr.	1-2-3 or parallel
8	Shakespeare	4	Soph., jr., sr.	1-2-3 or parallel
27	History of the English Language	2	Soph., jr., sr.	4
40	Bible as Literature.....	4	Soph., jr., sr.	1-2-3 or parallel
44-45	American Literature.....	6†	Jr., sr.	1-2-3
51	Spenser	3	Jr., sr.	1-2-3
53	Seventeenth-Century Lyrists.	4	Jr., sr.	1-2-3
58-59	Nineteenth-Century Prose...	6†	Soph., jr., sr.	1-2-3
62	Milton	4	Jr., sr.	1-2-3
64	Bacon	3	Jr., sr.	1-2-3
66	English Novel.....	4	Jr., sr.	1-2-3

For additional courses, see the bulletin of the College of Science, Literature, and the Arts.

ENTOMOLOGY AND ECONOMIC ZOOLOGY

No.	Title	Credits	Offered to	Prerequisite courses
1	Introductory Entomology....	5	Soph., jr., sr.	An. biol. 9 cred.
2	Economic Entomology.....	5	Soph., jr., sr.	1
3	Elementary Economic Entomology	3	Soph., jr., sr.	An. biol. 9 cred.
4	Economic Vertebrate Zoology	3	Jr., sr.	An. biol. 9 cred.

† The full course must be completed before credit will be allowed.

EDUCATIONAL PSYCHOLOGY

COLLEGE OF EDUCATION

No.	Title	Hour	Day	Room	Instructor
45f,s*	Elementary Educational Psychology	I	MWF	Psy	Miss Dealey
45w*	Elementary Educational Psychology	IV	MWF	Psy	Miss Dealey
106f-107w-108s	Advanced Educational Psychology	III	MWF	Psy	Mr. Van Wagenen
111s*	Educational Diagnosis.....	II	MWF	Psy	Mr. Van Wagenen

ENGLISH

COLLEGE OF SCIENCE, LITERATURE, AND THE ARTS

No.	Title	Hour	Day	Room	Instructor
1f-2w-3s*	General Survey of English Literature				
	Sec. 1 Lect.	II	M	Ar	Ar
	Rec.		WF	114F	Ar
	2 Lect.	VI	T	Ar	Ar
	Rec.	VI	WF	205F	Ar
4w,s*	Old English.....	V	MTThF	204F(w)205F(s)	Ar
6f*	Chaucer	VII	MWThF	204F	Ar
6w*	Chaucer	IV	MTWF	205F	Ar
6s*	Chaucer	II	TWFS	204F	Ar
8f,w*	Shakespeare				
	Sec. 1	I	TWFS	204F	Ar
	2	V	MTThF	204F	Ar
8s*	Shakespeare				
	Sec. 1	I	TWFS	204F	Ar
	2	IV	MTWF	204F	Ar
27w*	History of English Language	VIII	TTh	204F	Mr. Klacber
40f*	Bible as Literature.....	III	MWF	301F	Mr. Burton
44f-45w*	American Literature.....	IV	MWF	204F	Mr. Moore
51f*	Spenser	VI	MWF	204F	Ar
53f*	Seventeenth-Century Lyrists.	II	MTWF	205F	Mr. Moore
58w-59s*	Nineteenth-Century Prose...	II	TThS	205F	Mr. Beach
62w*	Milton	VI	MTThF	204F	Ar
64s*	Bacon	VI	MWF	204F	Ar
66f*	English Novel.....	IV	MTWF	9F	Mr. Burton

ENTOMOLOGY AND ECONOMIC ZOOLOGY

No.	Title	Hour	Day	Room	Instructor
1f,s*†	Introductory Entomology....	V, VI	MTWThF	208-210AB	Mr. Oestlund, Mr. Riley
2w†	Economic Entomology.....	V, VI	MTWThF	306Ad	Mr. Ruggles
3f,w	Elementary Econ. Entomology	V, VI, VII	WF	306Ad	Mr. Ruggles
4f	Economic Vertebrate Entomology	Ar	Ar	Ar	Mr. Washburn

* Offered on the Minneapolis campus.

† Offered also during the summer session.

COURSES IN AGRICULTURE

No.	Title	Credits	Offered to	Prerequisite courses
5	Elementary Forest Entomology	3	Soph., jr., sr.	An. biol. 9 cred.
6	Insects of Forest Products..	3	Soph., jr., sr.	5
8	Varieties and Habits of Fur-Bearing Animals.....	3	Soph., jr., sr.	An. biol. 9 cred.
12	Forest Zoology.....	3	Jr., sr.	An. biol. 9 cred.
20	Home Economics Entomology	3	Soph., jr., sr.	An. biol. 6 cred.
37-38-39	General Entomology.....	9	Soph., jr., sr.	An. biol. 9 cred.
44	Introductory Course in Animal Parasites and Parasitism	3	Soph., jr., sr.	An. biol. 9 cred.
117-118-119	General Ecology of Insects..	9	Jr., sr.	1-2 or 37-38-39
125-126-127	Advanced General Entomology	9	Jr., sr.	1-2 or 37-38-39
130	Biology and Taxonomy of the Aphididae	5	Sr.	1-2 or 37-38-39
139-140	Histology and Development of Insects.....	6	Jr., sr.	1-2 or 37-38-39
144-145-146	Animal Parasites and Parasitism	3-9	Jr., sr.	1-2 or 37-38-39
150	Insecticides and Their Action	3 or 6	Jr., sr.	1-2 or 37-38-39, Agr. Biochem., 7-8 or equiv.
197	Introduction to Research....	5 or more	Sr.	1-2 or 37-38-39 and other work as prescribed by the division

FARM ENGINEERING

No.	Title	Credits	Offered to	Prerequisite courses
3	Mechanical Drawing.....	2	All	None
4	Blacksmithing	2	All	None
5	Carpentry	3	All	None
7	Farm Structures.....	3	Jr., sr.	3
8	Farm Engineering.....	5	All	None
11	Applied Mathematics.....	5	All	None
13	Farm Motors I.....	3	All	None
14	Farm Motors II.....	3	All	13
15	Mechanical Laboratory.....	2	All	None
17	Advanced Blacksmithing....	2	All	4
18	Surveying	5	Jr., sr.†	3, 11 or equiv.
23	General Physics.....	5	All	None

† Open also to sophomores in forestry.

PROGRAM

101

No.	Title	Hour	Day	Room	Instructor
3f	Elementary Forest Entomology	V, VI, VII	WF	306Ad	Mr. Graham
6w	Insects of Forest Products..	Ar	Ar	Ar	Mr. Graham
8f	Varieties and Habits of Fur-Bearing Animals.....	Ar	Ar	Ar	Ar
12w	Forest Zoology.....	Ar	Ar	Ar	Mr. Washburn
20w	Home Economics Entomology	V, VI, VII	TTh	307Ad	Mr. Riley, Mr. Ruggles
37f-38w-39s*	General Entomology.....	I, II	MWF	208-210AB	Mr. Oestlund
44f,s	Introductory Course in Animal Parasites and Parasitism	V, VI, VII, VIII	MW or TTh	321Ad	Mr. Riley
117f-118w-119s*	General Ecology of Insects..	V, VI, VII	TTh	208-210AB	Mr. Chapman
125f-126w-127s*	Advanced General Entomology	III, IV	TThS	208-210AB	Mr. Oestlund
130w*	Biology and Taxonomy of Aphididae	Ar	Ar	Ar	Mr. Oestlund
139f-140w*	Histology and Development of Insects.....	III, IV	MWF	208-210AB	Mr. Riley
144f-145w-146s	Animal Parasites and Parasitism	V, VI, VII	WF	Ar	Mr. Riley
150f†	Insecticides and Their Action	Ar	Ar	Ar	Mr. Moore
197f,w,s†	Introduction to Research....	Ar	Ar	Ar	Mr. Oestlund, Mr. Ruggles, Mr. Chapman, Mr. Moore, Mr. Riley, Mr. Washburn

FARM ENGINEERING

No.	Title	Hour	Day	Room	Instructor
3f,s	Mechanical Drawing.....	III, IV	MWF	305En	Mr. Jacobson
4s	Blacksmithing	V, VI, VII	TTh	20En	Mr. Johnston
5f	Carpentry	I, II	TThS	48En	Mr. White
7w	Farm Structures.....				
	Lect.	IV	TS	305En	Mr. White
	Lab.	VI, VII, VIII	M	305En	Mr. White
8f,w	Farm Engineering.....	I	MTWFS	107En	Mr. Boss
11f,w,s	Applied Mathematics.....	III	MTWFS	215En	
13f	Farm Motors I.....	I, II	TThS	37En	Mr. Torrance
13s	Farm Motors I.....	V, VI, VII	MF	37En	Mr. Torrance
14s	Farm Motors II.....	V, VI, VII	TTh	37En	Mr. Torrance
15f,s	Mechanical Laboratory.....	I, II	WF	56,101En	Mr. Dent
17s	Advanced Blacksmithing....	V, VI, VII	WF	20En	Mr. Johnston
18s	Surveying	1:15-5:20	MWF	215En	Mr. Roe
23f,s	General Physics.....				
	Lect.	III	TThS	102En	Mr. Stewart
	Sec. 1 Lab.	I, II	TS	103En	Mr. Tyler
	2	V, VI	TTh	103En	Mr. Tyler

* Offered on the Minneapolis campus.

† Offered also during the summer session.

COURSES IN AGRICULTURE

No.	Title	Credits	Offered to	Prerequisite courses
24	Agricultural Physics I.....	4	All	8, 11, 23 or equiv.
25	Agricultural Physics II.....	4	All	24
28	Land-Clearing	3	Jr., sr.	None
31	Farm Surveying and Drainage	5	Jr., sr.	3, 11 or equiv.
34	Household Mechanics and Heat	4	All	23 or equiv.
35	Household Electricity and Light	4	All	34
101	Advanced Drainage.....	3	Sr.	31

FORESTRY

No.	Title	Credits	Offered to	Prerequisite courses
1	General Forestry.....	4	All	None
2	Elementary Dendrology.....	3	All	None
3-4	Dendrology	8†	Soph., jr., sr.	Bot. 4
5	Elementary Sylviculture.....	3	All	None
9	Elementary Mensuration....	5	All	None
10	Forest Mensuration.....	5	Jr., sr.	3-4
11	Forest Valuation.....	5	Jr., sr.	10, 41
20	Grazing	3	Jr., sr.	None
23	Factory Experience.....	3 to 5	Jr., sr.	33-34
26	Tree Crops.....	1	All	None
27	Groves and Windbreaks.....	3	All	None
28	Logging	3	Sr.	3-4
29	Sawmills and Wood Working Machinery	3	Jr., sr.	33-34
30	Wood-Seasoning	3	Jr., sr.	33-34
31	Logging Plans.....	3	Sr.	28
32	Lumber Distribution.....	5	Jr., sr.	33-34
33-34	Wood Structure and Identification	6	Jr., sr.	3-4, Bot. 4-5-6
35	Seeding and Planting.....	3	Jr., sr.	41
36	Forest Policy and Administration	5	Sr.	43, 11, 28 parallel
39	Wood Preservation.....	3	Jr., sr.	33-34
40	Forest By-Products.....	3	All	None

† The full course must be completed before credit will be allowed.

No.	Title	Hour	Day	Room	Instructor
24w	Agricultural Physics I.....				
	Lect.	III	MWF	102En	Mr. Stewart
	Lab.	V, VI, VII	M	103En	Mr. Tyler
25s	Agricultural Physics II.....				
	Lect.	III	MWF	102En	Mr. Stewart
	Lab.	V, VI, VII	M	103En	Mr. Tyler
28w	Land-Clearing	Ar	Ar	Ar	Mr. Thompson
31f	Farm Surveying and Drain- age	1:15-5:20	MWF	215En	Mr. Roe
34w	Household Mechanics and Heat				
	Lect.	II	MWF	102En	Mr. Stewart
	Sec. 1 Lab.	V, VI	F	103En	Mr. Stewart
	2	I, II	Th	103En	Mr. Stewart
35s	Household Electricity and Light				
	Lect.	II	MWF	102En	Mr. Stewart
	Sec. 1 Lab.	V, VI	F	103En	Mr. Stewart
	2	I, II	Th	103En	Mr. Stewart
101s	Advanced Drainage.....	Ar	Ar	Ar	Mr. Roe

FORESTRY

No.	Title	Hour	Day	Room	Instructor
1f,s	General Forestry.....	II	MTWTF	302Hr	Mr. Cheyney
2†	Elementary Dendrology.....				Mr. Wentling
3f-4w	Dendrology				
	Lect.	II	TThS	302Hr	Mr. Wentling
	Lab.	VI, VII, VIII	M	302Hr	Mr. De Flon
3w-4s	Dendrology				
	Lect.	I	TThS	302Hr	Mr. Wentling
	Lab.	VI, VII, VIII	F	302Hr	Mr. De Flon
5†	Elementary Sylviculture.....				Mr. Wentling
9†	Elementary Mensuration....				Mr. Allison
10w	Forest Mensuration.....	IV	MTWFS	302Hr	Mr. Hansen
11f	Forest Valuation.....	I	MTWThF	302Hr	Mr. Allison
20w	Grazing	III	TThS	302Hr	Mr. Allison
23††	Factory Experience.....				
26f,w	Tree Crops.....	IV‡	TS	217En	Mr. Cheyney
27w	Groves and Wind Breaks...	I	MWF	302Hr	Mr. Wiggins
28w	Logging	III	MWF	302Hr	Mr. Cheyney
29f	Sawmill and Wood-Working Machinery	IV	MWF	301Hr	Mr. Cheyney
30s	Wood Seasoning.....	III	MWF	302Hr	Mr. Cheyney
31s	Logging Plans.....	Ar	Ar	Ar	Mr. Cheyney
32w	Lumber Distribution.....	II	MTWThF	302Hr	Mr. Cheyney
33f-34w	Wood Structure and Identi- fication	V, VI, VII	WF	303Hr	Mr. Wentling
35w	Seeding and Planting.....	III	MWF	301Hr	.....
36w	Forest Policy and Adminis- tration	I	MTWThF	202Hr	Mr. Allison
39f	Wood Preservation.....	II	TThS	202Hr	Mr. Allison
40s	Forest By-Products.....	I	MWF	302Hr	Mr. Allison

† Offered only during summer session at Itasca Park.

†† Arrangements for this course must be made in advance.

‡ In the fall quarter this course follows hygiene lectures the last six weeks of the quarter.

In the winter quarter it will be given the first six weeks of the quarter.

COURSES IN AGRICULTURE

No.	Title	Credits	Offered to	Prerequisite courses
41	Sylvics	3	Jr., sr.	3-4, Bot. 4-5-6
43	Sylviculture Laboratory.....	6	Jr., sr.	35
44	Wood Pulp and Paper.....	3	Jr., sr.	33-34 Chem. 3 or 10
45	Forest Regulation.....	3	Sr.	43, 11
46	Forest Regulation Laboratory	3	Jr.	43, 11
101	Advanced Dendrology.....	3	Jr., sr.	3-4, Bot. 4-5-6
106	Research Methods in Sylviculture	3	Sr.	43
107	Uses of Wood I.....	3	Sr.	33-34
108	Uses of Wood II.....	3	Sr.	33-34
109	Uses of Wood III.....	3	Sr.	107, 108
110	Mechanical and Physical Properties of Wood.....	2	Sr.	33-34
111	Advanced Wood Structure..	3	Sr.	33-34
112	Advanced Forest Mensuration	3	Sr.	10
113	Advanced Forest By-Products	3	Sr.	33-34, Chem. 35-36

FRESHMAN LECTURES

No.	Title	Credits	Offered to	Prerequisite courses
1	Agriculture and Forestry....	None	Fr.	None
2	Home Economics.....	None	Fr.	None

GEOLOGY AND MINERALOGY

COLLEGE OF SCIENCE, LITERATURE, AND THE ARTS

No.	Title	Credits	Offered to	Prerequisite courses
1-2	General Geology.....	10†	Soph., jr., sr.	Chemistry
7-8	Laboratory Work.....	2†	Soph., jr., sr.	Supports 1-2
11-12	Introduction to Geology....	8†	Soph., jr., sr.	None
21-22	Essentials of Mineralogy...	6†	Soph., jr., sr.	Chemistry
29	General Physiography.....	5	Soph., jr., sr.	None
34	Meteorology	5	Soph., jr., sr.	None
37	Economic and Commercial Geography	5	Soph., jr., sr.	None
51-52	Economic Geology.....	6†	Jr., sr.	1-2

For additional courses see the bulletin of the College of Science, Literature, and the Arts.

† Both quarters must be completed before credit will be given.

No.	Title	Hour	Day	Room	Instructor
41f	Sylvics	II	MWF	301Hr	Mr. Wentling
43s	Sylviculture Laboratory....	Ar	Ar	Ar	Mr. Wentling
44s	Wood Pulp and Paper.....	II	MWF	301Hr	Mr. Allison
45s	Forest Regulation.....	IV	MWF	302Hr	Mr. Allison
46s	Forest Regulation Laboratory	Ar	Ar	Ar	Mr. Allison
101w	Advanced Dendrology.....	Ar	Ar	Ar	Mr. Wentling
106w	Research Methods in Sylvi- culture	II	MWF	301Hr	.....
107f	Uses of Wood I.....	IV	MWF	303Hr	Mr. Wentling
108w	Uses of Wood II.....	IV	MWF	303Hr	Mr. Wentling
109s	Uses of Wood III.....	IV	MWF	303Hr	Mr. Wentling
110w	Mechanical and Physical Properties of Wood.....	V, VI	TTh	303Hr	Mr. Wentling
111f	Advanced Wood Structures..	V, VI, VII	TTh	303Hr	Mr. Wentling
112w	Advanced Forest Mensura- tion	Ar	Ar	Ar	Mr. Hansen
113w	Advanced Forest By-Products	Ar	Ar	Ar	Mr. Allison

FRESHMAN LECTURES

No.	Title	Hour	Day	Room	Instructor
1f	Agriculture and Forestry....	III	Th	107En	Mr. Freeman
2f	Home Economics.....	V	F	203HE	Mr. Freeman

GEOLOGY AND MINERALOGY

COLLEGE OF SCIENCE, LITERATURE, AND THE ARTS

No.	Title	Hour	Day	Room	Instructor
1f-2w*	General Geology.....				
	Sec. 1	I	TWThFS	210P	Mr. Thiel
	2	III	MTThFS	110P	Mr. Emmons
	3	VI	MTWThF	110P	Mr. Allison
1w-2s*	General Geology.....	II	MWThFS	210P	Mr. Werner
1s-2w*	General Geology.....	III	MTThFS	110P	Mr. Emmons
7f-8w*	General Geology Lab.....	Ar	Ar	112P	Mr. Allison
7w-8s*	General Geology Lab.....	Ar	Ar	112P	Mr. Allison
7s*	General Geology Lab.....	Ar	Ar	112P	Mr. Allison
11f-12w*	Introduction to Geology....	VII	MTWThF	200aP	Mr. Werner
21w-22s*	Essentials of Mineralogy....				
	Lect.	IV	MWF	210P	Mr. Gruner
	Lab.	V-VIII	F	100P	Mr. Gruner
	Lab.	III	MWF	100P	Mr. Gruner
29f*	General Physiography.....	III	MTThFS	210P	.....
34w*	Meteorology	III	MTThFS	210P	.....
37s*	Economic and Commercial Geography	III	MTThFS	210P	.....
51f-52w*	Economic Geology.....	II	MWF	210P	Mr. Schwartz

* Offered on the Minneapolis campus.

COURSES IN AGRICULTURE

GERMAN

COLLEGE OF SCIENCE, LITERATURE, AND THE ARTS

No.	Title	Credits	Offered to	Prerequisite courses
1	Beginning, A.....	5	All	None
2	Beginning, B.....	5	All	1 or 1 yr. prep. German
3	Beginning, C.....	5	All	2
10	Rapid Reading.....	5	All	3 or 2 yrs. prep. German
11	Advanced Rapid Reading....	5	All	10 or 3 yrs. prep. German
14	Nineteenth-Century Prose...	5	All	11 or 4 yrs. prep. German
28-29	Advanced Chemical German	6†	All	15

GERMAN

COLLEGE OF SCIENCE, LITERATURE, AND THE ARTS

No.	Title	Hour	Day	Room	Instructor
1f*	Beginning A.....				
	Sec. 1	I	TWThFS	207F	Ar
	2	II	MWThFS	207F	Ar
	3	IV	MTWFS	207F	Ar
	4	VI	MTWThF	207F	Ar
1w*	Beginning A.....				
	Sec. 1	I	TWThFS	209½F	Ar
	2	V	MTWThF	209½F	Ar
1s*	Beginning A.....				
	Sec. 1	II	MWThFS	209½F	Ar
	2	V	MTWThF	207F	Ar
2f*	Beginning B.....				
	Sec. 1	II	MWThFS	209F	Ar
	2	VI	MTWThF	209½F	Ar
2w*	Beginning B.....				
	Sec. 1	I	TWThFS	207F	Ar
	2	II	MWThFS	207F	Ar
	3	IV	MTWFS	207F	Ar
	4	VI	MTWThF	207F	Ar
2s*	Beginning B.....				
	Sec. 1	I	TWThFS	209½F	Ar
	2	V	MTWThF	209½F	Ar
3f*	Beginning C.....				
	Sec. 1	IV	MTWFS	209F	Ar
	2	V	MTWThF	207F	Ar
3w*	Beginning C.....				
	Sec. 1	II	MWThFS	209F	Ar
	2	VI	MTWThF	209½F	Ar
3s*	Beginning C.....				
	Sec. 1	I	TWThFS	207F	Ar
	2	II	MWThFS	207F	Ar
	3	IV	MTWFS	207F	Ar
	4	VI	MTWThF	207F	Ar
1of*	Rapid Reading.....				
	Sec. 1	II	MWThFS	212F	Ar
	2	IV	MTWFS	209½F	Ar
	3	VI	MTWThF	212F	Ar
1ow*	Rapid Reading.....				
	Sec. 1	IV	MTWFS	209F	Ar
	2	V	MTWThF	207F	Ar
1os*	Rapid Reading.....				
	Sec. 1	II	MWThFS	209F	Ar
	2	VI	MTWThF	209½F	Ar
11f*	Advanced Rapid Reading....	II	MWThFS	209½F	Ar
11w*	Advanced Rapid Reading....				
	Sec. 1	II	MWThFS	212F	Ar
	2	VI	MTWThF	212F	Ar
11s*	Advanced Rapid Reading....	IV	MTWFS	209F	Ar
14s*	Nineteenth-Century Prose...	II	MTThFS	212F	Ar
28w-29s*	Advanced Chemical German...	III	MWF	209½F	Ar

* Offered on the Minneapolis campus.

No.	Title	Credits	Offered to	Prerequisite courses
31-32	Medical German.....	6†	All	10 or 15
40	Commercial German.....	5	All	10
50-51-52	Composition	3†	Jr., sr.	11, 14 or 4 yrs. prep. German
53-54-55	Conversation	3†	Jr., sr.	11, 14 or 4 yrs. prep. German
63	Modern Drama.....	3	Jr., sr.	11 or 14
64	Classic Drama.....	3	Jr., sr.	14 or 63
74	German Poets.....	3	Jr., sr.	63 or 64

For additional courses see the bulletin of the College of Science, Literature, and the Arts.

HISTORY AND PHILOSOPHY OF EDUCATION

COLLEGE OF EDUCATION

No.	Title	Credits	Offered to	Prerequisite courses
1	Brief Course in the History of Education.....	5	Jr., sr.	Psychol. 6 cred.
101-102-103	Foundations of Modern Education	9	Jr., sr.	Psychol. 6 cred., hist. 6 cred.

For additional courses see the bulletin of the College of Education.

HOME ECONOMICS

No.	Title	Credits	Offered to	Prerequisite courses
3	Textiles	5	All	None
4	Textiles	3	All‡	None
5-6	Textiles	3	See note ††	None
11	Garment-Making	3	All	None

† All quarters must be completed before credit is granted.

‡ Not open to students in home economics.

†† For teachers only.

PROGRAM

109

No.	Title	Hour	Day	Room	Instructor
31f-32w*	Medical German.....	I	MWF	212F	Ar
31w-32s*	Medical German.....				
	Sec. 1	I	MWF	209F	Ar
	2	I	TThS	209F	Ar
31s*	Medical German.....	I	MWF	212F	Ar
32f*	Medical German.....	I	MWF	209½F	Ar
40w*	Commercial German.....	V	MTWThF	302D	Mr. Laughlin
50f-51w-52s*	Composition	III	W	227F	Mr. Laughlin
53f-54w-55s*	Conversation	IV	TS	101F	Mr. Laughlin
63f*	Modern Drama.....	IV	MWF	212F	Mr. Davies
63s*	Modern Drama.....	II	MWF	125F	Mr. Dowus
64w*	Classic Drama.....	IV	MWF	209½F	Mr. Meyers
74s*	German Poets.....	IV	MWF	212F	Mr. Davies

HISTORY AND PHILOSOPHY OF EDUCATION

COLLEGE OF EDUCATION

No.	Title	Hour	Day	Room	Instructor
1f*	Brief Course in the History of Education.....				
	Sec. 1	II	MWThFS	102Ed	Miss Alexander
	2	IV	MTWFS	205Ed	Miss Alexander
	3	VI	MTWThF	205Ed	Miss Alexander
1w,s*	Brief Course in the History of Education.....	II	MTWThF	205Ed	Miss Alexander
101f-102w- 103s*	Historical Foundations of Modern Education.....	VII	MWF	205Ed	Mr. Swift

HOME ECONOMICS

No.	Title	Hour	Day	Room	Instructor
3f,w	Textiles	I, II	MTWThF	211,305HE	Miss Weller, Miss Phelps
	(Limited to 20)				
3s	Textiles				
	(Limited to 20)				
	Sec. 1	I, II	MTWThF	211,307HE	Miss Weller, Miss Phelps
	2	III, IV	MTWFS	211,307HE	Miss Weller, Miss Phelps
4f,w,s	Textiles (S. L. & A.).....	V, VI	MWF	211,307HE	Miss Phelps
	(Limited to 20)				
5f-6w	Textiles (Teachers).....	II, III, IV	S	211,307HE	Miss Weller
	(Limited to 20)				
11f,w,s	Garment-Making				
	(Limited to 20)				
	Sec. 1	I, II	MWF	304HE	Miss McDowell, Miss Ebersole
	2	I, II	TThS	304HE	Miss McDowell, Miss Ebersole
	3	V, VI, VII	TTh	304HE	Miss McDowell, Miss Ebersole

* Offered on the Minneapolis campus.

COURSES IN AGRICULTURE

No.	Title	Credits	Offered to	Prerequisite courses
13	Dressmaking	5	Soph., jr., sr.	3, 11, 51, Home Pract. in Garment-Making
17	Advanced Clothing Construction	3	Jr., sr.	13, 52, 53
18	Commercial Clothing Manufacture	4	Sr.	17 or parallel
21	Foods and Cookery.....	5	Soph., jr., sr.	Chem. 5 cred., Physiol. 4 parallel
22	Food Economics.....	5	Soph., jr., sr.	21
23	Nutrition I.....	5	Jr., sr.	22, Agr. Biochem. 3, Bact. 1
24	Camp Cookery.....	4	All†	None
34	Home Management: Operation and Maintenance, Lectures	3	Jr.,† sr.	22, 35, parallel, Econ. 5 or parallel
35	Home Management: Operation and Maintenance, Laboratory	6	Jr.,† sr.	22, 37 and H. E. Educ. 40 or parallel, 34 parallel Home Pract. in Foods and Cookery advised
37	Home Care of the Sick.....	3	Jr., sr.	Chem. 5 cred., Bact. 1
45	Home Economics Survey....	2	Sr.	None
51	Drawing and Design.....	3	All	None

† Open to juniors only in their third quarter.

PROGRAM

111

No.	Title	Hour	Day	Room	Instructor
13f,w	Dressmaking (Limited to 20)	III, IV	MTWFS	304HE	Miss McDowell, Miss Patchin
13s	Dressmaking (Limited to 20) Sec. 1	III, IV	MTWFS	304HE	Miss McDowell, Miss Patchin
	2	I, II	TWThFS	112HE	Miss McDowell, Miss Patchin
17f,w,s†	Advanced Clothing Construc- tion (Limited to 20)	III, IV	MWF	305HE	Miss McDowell, Miss Patchin, Miss Carlotta Brown
18w,s	Commercial Clothing Manu- facture	V, VI, VII, VIII	MWF	305HE	Miss Patchin
21f,w	Foods and Cookery..... (Limited to 20) Sec. 1	V, VI	MTWThF	209HE	Miss Child
	2	III, IV	MTWFS	209HE	Miss Child
21s	Foods and Cookery..... (Limited to 20) Sec. 1	I, II	TWThFS	209HE	Miss Child
	2	III, IV	MTWFS	209HE	Miss Child
22f,w	Food Economics..... (Limited to 20)	III, IV	MTWFS	205,207HE	Miss Child
22s	Food Economics..... (Limited to 20) Sec. 1	III, IV	MTWFS	205,207HE	Miss Child
	2	V, VI	MTWThF	104,105,106HE	Ar
23f,w	Nutrition I..... (Limited to 25)	V, VI, VII, VIII	MWF	211,213HE	Miss Anderson
24s	Camp Cookery.....	VII, VIII	MWF	105,106HE	Miss Child
34f,w,s†	Home Management: Opera- tion and Maintenance, Lectures	III	TThS	203HE	Miss Studley
35f,w,s†	Home Management; Opera- tion and Maintenance, Laboratory	Ar	Ar	Ar	Miss Lindquist, Miss Studley
37f,s†	Home Care of the Sick..... Lect.	I	S	213HE	Miss Moorhead
	Lab.	V, VI	TTh	WH	Miss Fisher
45w	Home Economics Survey....	IV	TS	203HE	Miss Weigley
51f,w,s	Drawing and Design..... (Limited to 20) Sec. 1	I, II	MWF	401HE	Miss Bacon, Miss V. Goldstein
	2	I, II	TThS	401HE	Miss Bacon, Miss V. Goldstein

† Offered also in the summer session.

COURSES IN AGRICULTURE

No.	Title	Credits	Offered to	Prerequisite courses
52	Art History and Appreciation	3	Jr., sr.	51
53	Advanced Design.....	4	Jr., sr.	51
54	Interior Design.....	3	Sr.	52, 53, 131
55	Decorative Needlework and Other Crafts.....	3	Jr., sr.	51, 53 or parallel
57	Weaving and Other Crafts..	3	Jr., sr.	3, 51, 53
58	Costume Design.....	3	Jr., sr.	55
61	Large Quantity Cookery and Marketing	4	Jr., sr.	22
63	Institutional Experience.....	3	Jr., sr.	22
69	Institution-Management Prac- tice	3	Sr.	151
70	Food Preparation in Rela- tion to Social Work.....	3	Soph.,† jr., sr.	An. Biol. 1-2, chem. 10 cred. advised
71	Elementary Dietetics for the Social Workers.....	3	Soph.,† jr., sr.	70, Physiol. 4 or parallel
72	Home-Management Problems	3	Soph.,† jr., sr.	71, Econ. 5 or parallel
103	Dietetics	5	Sr.	108
105	Experimental Cookery.....	3	Jr., sr.	108
108	Nutrition II.....	5	Jr., sr.	23

† Open to sophomores only in their third quarter. Not open to students in home economics except by special permission of the head of the division.

PROGRAM

113

No.	Title	Hour	Day	Room	Instructor
	Sec. 3	V, VI, VII	TTh	402HE	Miss Bacon, Miss V. Goldstein
52f,s	Art History and Appreciation (Limited to 2c)				
	Sec. 1	II	MWF	309HE	Miss V. Goldstein
	2	VII	MWF	309HE	Miss V. Goldstein
52w	Art History and Appreciation (Limited to 20)	VII	MWF	309HE	Miss H. Goldstein
53f	Advanced Design..... (Limited to 20)				
	Sec. 1	V, VI, VII	MWF	402HE	Miss H. Goldstein, Miss V. Goldstein
	2	I, II	MWThF	402HE	Miss H. Goldstein, Miss V. Goldstein
53w,s	Advanced Design..... (Limited to 20)	I, II	MWThF	402HE	Miss H. Goldstein, Miss Patchin, Miss V. Goldstein
54s	Interior Design.....	V, VI	MWF	401HE	Miss Morse
55f,s	Decorative Needlework and other Crafts..... (Limited to 12)	V, VI, VII	TTh	401HE	Miss Morse
57w	Weaving and Other Crafts.. (Limited to 12)	V, VI, VII	TTh	401HE	Miss Morse
58w	Costume Design.....	V, VI	MWF	402HE	Miss H. Goldstein
61f,s	Large Quantity Cookery and Marketing (Limited to 10)				
	Lect.	I	S	309HE	Miss Richards, Miss Farmer
	Lab.	I, II, III	TTh	DiH	Miss Richards
63f,w	Institutional Experience..... Lect.	I	T	309HE	Miss Treat, Miss Richards
	Lab.	Three fourth hour periods to be arranged			
69s	Institution-Management Prac- tice	Two 8 hour days	Ar	Ar	Miss Treat, Miss Richards
70w	Food Preparation in Relation to Social Work.....	V, VI	MWF	107HE	Miss Lindquist
71s	Elementary Dietetics for So- cial Workers.....	V, VI	MWF	107HE	Miss Mumford
72f	Home-Management Problems.	V	MWF	106HE	Miss Lindquist
103f,w,s	Dietetics (Limited to 20)	V, VI	MTWThF	207-203HE	Miss Biester, Miss Mumford
105w,s†	Experimental Cookery..... (Limited to 12)	I, II	MWF	207HE	Miss Weigley, Miss Child
108f,w,s†	Nutrition II..... (Limited to 25)	III, IV	MTWFS	211-213HE	Miss Anderson, Miss Mumford

† Offered also in the summer session.

COURSES IN AGRICULTURE

No.	Title	Credits	Offered to	Prerequisite courses
109	Advanced Nutrition.....	5	Jr., sr.	108, Agr. Biochem. 2
110	Special Problems in Dietetics	3	Sr.	103
111	Special Food Problems.....	3	Sr.	105, Agr. Biochem. 2
122	Advanced Textiles.....	3	Jr., sr.	3, Agr. Biochem. 2
123	Clothing Economics.....	2	Jr., sr.	13, Econ. 5
131	Home Management: House- Planning and Equipment..	5	Jr., sr.	52, 53
151	Institution Management....	4	Sr.	61, 63

HOME ECONOMICS EDUCATION

COLLEGE OF EDUCATION

No.	Title	Credits	Offered to	Prerequisite courses
40	Child-Training	3	Jr., sr.	H. E. 37, Psychol. 1-2
42	Special Methods of Teaching Home Economics.....	5	Jr., sr.	H.E. 13, 22, Psychol. 1-2
43	Organization and Methods for Related Art Teaching.	3	Sr.	42, H. E. 52, 53, 131
44	Methods in Home Economics Extension Work.....	3	Sr.	42
46	Observation and Teaching: Related Art.....	8	Sr.	42, H. E. 13, 52, 53, Educ. 45 or Agr. Educ. 11, see course de- scription
47	Observation and Teaching: Foods and Home Manage- ment	8	Sr.	42, Educ. 45 or Agr. Educ. 11, see course de- scription
48	Observation and Teaching: Textiles and Clothing....	8	Sr.	42, Educ. 45 or Agr. Educ. 11, see course de- scription
49	Observation and Teaching: General Home Economics.	8	Sr.	42, Educ. 45 or Agr. Educ. 11, see course de- scription
141	Problems in Home Economics Education	3	Sr.	42, Educ. Psychol.

PROGRAM

115

No.	Title	Hour	Day	Room	Instructor
109s	Advanced Nutrition..... (Limited to 15)				
	Lect.	III	TS	106HE	Miss Biester,
	Lab.	V, VI, VII, VII	TTh	311HE	Miss Anderson
110s	Special Problems in Dietetics (Limited to 20)				
	Lect.	VII	MW	213HE	Miss Biester
	Lab.	One full afternoon	Ar		Miss Mumford
111s†	Special Food Problems.....	V, VI, VII	TTh	107HE	Miss Child
122f,w	Advanced Textiles..... (Limited to 16)	V, VI, VII	TTh	307-311HE	Miss Phelps, Miss Weller
123w,s	Clothing Economics.....	III	TTh	313HE	Miss Weller
131f,w,s	Home Management: House- Planning and Equipment..	III, IV	MTWFS	401HE	Miss Morse
151w	Institution Management.....	III	TS	106HE	Miss Treat
		III, IV	M	106HE	Miss Treat

HOME ECONOMICS EDUCATION

COLLEGE OF EDUCATION

No.	Title	Hour	Day	Room	Instructor
40f	Child-Training	IV	MWF	203HE	Miss Binzel
42f,s†	Special Methods of Teaching Home Economics.....	VII	MTWThF	313HE	Miss Miller, Miss Clara Brown
43w	Organization and Methods for Related Art Teaching.....	IV	MWF	309HE	Miss H. Goldstein
44s	Methods in Home-Economics Extension Work.....	IV	MWF	309HE	Miss Lombard, Miss Newton
46f,w	Observation and Teaching: Related Art.....				
	Lect.	VIII	TTh	213HE	Miss Brown,
	Teaching	Ar	Ar	Ar	Miss Bacon
47f,w	Observation and Teaching: Foods and Home Manage- ment				
	Lect.	VIII	TTh	213HE	Miss Miller, Mrs. Dorsey, Miss Lombard, Miss Rider
	Teaching	Ar	Ar	Ar	
48f,w	Observation and Teaching: Textiles and Clothing.....				
	Lect.	VIII	TTh	213HE	Miss Clara Brown
	Teaching	Ar	Ar	Ar	
49f,w	Observation and Teaching: General Home Economics.				
	Lect.	VIII	TTh	213HE	Miss Miller, Miss Brown
	Teaching	Ar	Ar	Ar	
141s†	Problems in Home Economics Education	Ar	Ar	Ar	.....

† Offered also in the summer session.

HORTICULTURE

No.	Title	Credits	Offered to	Prerequisite courses
6	Fruit-Growing	3	All	None
21	Small-Fruit Culture.....	3	Soph., jr., sr.	6 or 32, bot. 9 cred.
32	Vegetable-Growing	3	All	None
33	Vegetable-Forcing	3	Soph., jr., sr.	32, bot. 9 cred.
50	Floriculture	3	All	None
56	Propagation and Nursery Practice	3	Soph., jr., sr.	None
71	Landscape-Gardening	3	All	None
91	Advanced General Horticulture	3	Jr., sr., in agr. educ.	Bot. 9 cred.
93	Judging Horticultural Crops	2	Soph., jr., sr.	6 or 32
107	Orchard Management.....	3	Jr., sr.	6
109	Principles of Genetics.....	3	Jr., sr.	Bot. 9 cred., an. biol. 9 cred.
110	Horticultural Crop-Breeding.	3	Jr., sr.	109
111	Systematic Pomology.....	3	Jr., sr.	6
131	Advanced Vegetable Production	3	Sr.	32
132	Systematic Olericulture.....	3	Jr., sr.	32
133	Commercial Truck-Growing..	3	Jr., sr.	32
135	Potato Production.....	3	Jr., sr.	6 or 32, bot. 9 cred.
151	Advanced Floriculture.....	3	Jr., sr.	50, bot. 9 cred.
191-192	Special Problems.....	6	Jr., sr.	Special permission
193-194-195	Horticultural Seminar.....	3	Jr., sr.	9 cred.

HORTICULTURE

No.	Title	Hour	Day	Room	Instructor
6f	Fruit-Growing				
	Sec. 1 Lect.	II	MW	102Hr	Mr. Alderman
	Lab.	I, II	T or F	3Hr	Mr. Alderman
	2 Lect.	IV	TS	102Hr	Mr. Alderman
	Lab.	VI, VII	M	8Hr	Mr. Alderman
21w	Small-Fruit Culture.....	IV	MWF	210Hr	Mr. Brierley
32s	Vegetable-Growing				
	Sec. 1 Lect.	II	MW	102Hr	Mr. Tapley
	Lab.	I, II	T or F	8Hr	Mr. Bushnell
	2 Lect.	IV	TS	102Hr	Mr. Tapley
	Lab.	VI, VII	M	8Hr	Mr. Bushnell
33w	Vegetable-Forcing				
	Lect.	I	TTh	210Hr	Mr. Tapley
	Lab.	V, VI	F	8Hr	Mr. Tapley
50s	Floriculture	III	MWF	102Hr	Mr. Cady
56s	Propagation and Nursery Practice				
	Lect.	III	TS	102Hr	Mr. Cady
	Lab.	V, VI	T	8Hr	Mr. Cady
71s	Landscape-Gardening	II	TThS	102Hr	Mr. Cady
91s	Advanced General Horticulture	Ar	Ar	Ar	Mr. Alderman
93f	Judging Horticultural Crops	V, VI, VII	T	8Hr	Mr. Alderman
107f	Orchard Management.....				
	Lect.	III	TTh	106Hr	Mr. Brierley
	Lab.	I, II	Th	8Hr	Mr. Brierley
109f	Principles of Genetics (See Agronomy 131)				
110w	Horticultural Crops-Breeding	I	TThS	212Hr	Mr. Dorsey
111f	Systematic Pomology.....	IV, V, VI, VII	W	8Hr	Mr. Alderman, Mr. Brierley
131f	Advanced Vegetable Production				
	Lect.	III	MW	210Hr	Mr. Tapley
	Lab.	I, II	S	8Hr	Mr. Tapley
132f	Systematic Olericulture.....				
	Lect.	II	TTh	210Hr	Mr. Tapley
	Lab.	V, VI	F	8Hr	Mr. Tapley
133w	Commercial Truck-Growing..	Ar	Ar	Ar	Mr. Tapley
135w	Potato Production.....				
	Lect.	III	MW	210Hr	Mr. Krantz
	Lab.	V, VI	Th	8Hr	Mr. Krantz
151f	Advanced Floriculture.....	Ar	Ar	Ar	Mr. Cady
191w-192s	Special Problems.....	Ar	Ar	Ar	Mr. Alderman
193f-194-195s	Horticultural Seminar.....	Ar	Ar	Ar	Horticultural Staff

MILITARY SCIENCE AND TACTICS

No.	Title	Credits	Offered to	Prerequisite courses
1-2-3	First-Year Basic Course R. O. T. C.....	None	Fr.	See note††
4-5-6	Second-Year Basic Course R. O. T. C.....	None	Soph.	1-2-3
51-52-53	First-Year Advanced Course R. O. T. C.....	9	Jr.	4-5-6
54-55-56	Second-Year Advanced Course R. O. T. C.....	9	Sr.	51-52-53

MUSIC

COLLEGE OF SCIENCE, LITERATURE, AND THE ARTS

No.	Title	Credits	Offered to	Prerequisite courses
1-2-3	Harmony	9†	Jr., sr.	None
16-17-18	Pianoforte	6 or 12†	Jr., sr.	None
22-23-24	Violin	6-12†	Jr., sr.	None
40-41-42	Orchestra	3†	Jr., sr.	See statement
43-44-45	Choir	3	Jr., sr.	None
46-47-48	Appreciation of Music.....	3†	Jr., sr.	None

For additional courses see the bulletin of the College of Science, Literature, and the Arts.

PHYSICAL EDUCATION

FOR MEN

No.	Title	Credits	Offered to	Prerequisite courses
1	Personal Hygiene.....	None	Fr.	None
2-3-4	Gymnasium and Swimming..	None	Fr.	None
5-6-7	Advanced Leaders.....	3†	Soph., jr., sr.	Instr. permission
8-9-10	Corrective Gymnastics.....	None	All	None
11-12‡	Wrestling	None	All	Instr. permission
13-14-15‡	Intermediate Swimming....	None	All	Instr. permission
16-17-18‡	Advanced Swimming.....	None	All	Instr. permission
19-20‡	Boxing	None	All	Instr. permission
21-22-23‡	Intramural Athletics.....	None	All	Instr. permission

† The full course must be completed before credit will be allowed.

‡ Students who meet all the requirements of Course 2-3-4 and show special ability may elect these courses instead of Course 2-3-4.

†† Must be legally eligible for enrolment in Reserve Officers' Training Corps. Consult commandant.

MILITARY SCIENCE AND TACTICS

No.	Title	Hour	Day	Room	Instructor
1f-2w*	First-Year Basic Course....	V	MWF	A	Ar
3s*	First-Year Basic Course....	VI, VII, VIII	W	A	Ar
4f-5w*	Second-Year Basic Course...	I	MWF	A	Ar
		III	MWF	A	Ar
		VII	MWF	A	Ar
6s*	Second-Year Basic Course...	VI, VII, VIII	W	A	Ar
51-52-53*	First-Year Advanced Course	Ar	Ar	Ar	Ar
54-55-56*	Second-Year Advanced Course	Ar	Ar	Ar	Ar

MUSIC

COLLEGE OF SCIENCE, LITERATURE, AND THE ARTS

No.	Title	Hour	Day	Room	Instructor
1f-2w-3s*	Harmony	II	MWF	Mu	Ar
		V	MWF	Mu	Ar
16f-17w-18s*	First-Year Piano.....	Ar	Ar	Mu	Ar
22f-23w-24s*	Violin	Ar	Ar	Mu	Ar
40f-41w-42s*	Orchestra	VIII	TF	A	Mr. Pepinsky
43f-44w-45s*	Choir	VIII	M	Mu	Mr. Scott
46f-47w-48s*	Appreciation of Music.....	V	M	Mu	Miss Reeves

PHYSICAL EDUCATION

FOR MEN

No.	Title	Hour	Day	Room	Instructor
1f,w,s*	Personal Hygiene.....				
	Sec. 1	II	TTh	A	Dr. Cooke, Mr. Roemer, Mr. Glidden
	2	III	TTh	A	Dr. Cooke, Mr. Roemer, Mr. Glidden
	3	IV	TS	A	Dr. Brown, Mr. Roemer, Mr. Glidden
	4	VI	TTh	A	Dr. Brown, Mr. Roemer, Mr. Glidden
	5	VII	TTh	A	Mr. Foster, Mr. Roemer, Mr. Glidden
2f-3w-4s*	Gymnasium				
	(Same schedule as Course 1, Hygiene)				
5f-6w-7s	Advanced Leaders.....	Ar	TThS	A	Mr. Foster, Mr. Roemer
8f-9w-10s*	Corrective Gymnastics.....	Ar	Ar	A	Dr. Brown
11w-12s*	Wrestling	Ar	Ar	A	Mr. Gilman
13f-14w-15s*	Intermediate Swimming.....	Ar	Ar	A	Mr. Glidden
16f-17w-18s*	Advanced Swimming.....	Ar	Ar	A	Mr. Foster, Mr. Glidden
19w-20s*	Boxing	Ar	Ar	A	Mr. Goldie
21f-22w-23s*	Intramural Athletics.....	Ar	Ar	A	Mr. Foster, Mr. Roemer

*Offered on the Minneapolis campus.

COURSES IN AGRICULTURE

PHYSICAL EDUCATION

FOR WOMEN

No.	Title	Credits	Offered to	Prerequisite courses
1-2-3‡	Elem. Phys. Training.....	0	Required of all new students	None
4	Preliminary Hygiene.....	0	Required of all new students	None
7-8-9‡	Sophomore Physical Training	0	Soph.	1-2-3
10-11-12	Soph. Orthopedic Gymnastics	0	Soph.	1-2-3
13-14-15	Soph. Interpretive Dancing	0	Soph.	1-2-3
16-17-18§	Soph. Organized Games and Folk-Dancing	0	Soph.	1-2-3
19-20-21§	Sophomore Major Sports...	0	Soph.	1-2-3
22-23	Sophomore Elementary Swimming	0	Soph.	1-2-3
28-29	Sophomore Advanced Swimming	0	Soph.	1-2-3, swimming test
32	Personal Hygiene.....	3	Soph., jr., sr.	An. Biol. 1-2
33	Hygiene of the Family....	3	Jr., sr.	An. Biol. 1-2
34-35-36‡	Intermed. Physical Training	3‡	Jr., sr.	6 qtrs. of phys. tr. Permission of director
40-41-42	Interpretive Dancing.....	3‡	Jr., sr.	6 qtrs. of phys. tr.
43-44-45§	Folk-Dancing and Organized Games	3	Jr., sr.	6 qtrs. of phys. tr.
46-47-48‡	Hockey, Basket-Ball and Baseball. No registration necessary	0	Fr., jr., sr.	Permission of director
49	General Swimming. No registration necessary.....	0	All	None

† The entire course must be completed before credit is received for any quarter.

‡ The third quarter of this course is open to students who have not had the first two quarters.

§ Students may enter any quarter.

PHYSICAL EDUCATION
FOR WOMEN

No.	Title	Hour	Day	Room	Instructor
1f-2w-3s*‡	Elem. Physical Train.....	IV	MWF	3,151,153WGm Ar	
		V	MWF	3,151,153WGm Ar	
		VI	MWF	3,151,153WGm Ar	
		VII	MWF	3,151,153WGm Ar	
		III	TThS	3,151,153WGm Ar	
4f*	Preliminary Hygiene.....	I	M	201WGm	Dr. Norris
		II	T	201WGm	Dr. Norris
		IV	T	201WGm	Dr. Norris
		VII	T	201WGm	Dr. Norris
		III	W	201WGm	Dr. Norris
7f-8w-9s*‡	Sophomore Physical Train..	IV	TS	3,153WGm	
		V	TTh	3,153WGm	
10f-11w-12s*	Soph. Orth. Gymnastics....	IV	TS	3,153WGm	
		V	TTh	3,153WGm	
13f-14w-15s*	Soph. Interpretive Dancing..	VII	TTh	151WGm	Miss Baker
		VIII	TTh	151WGm	Miss Baker
16f-17w-18s*§	Soph. Org. Games and Folk-Dancing	III	MF	151WGm	Ar
19f-20w-21s*§	Soph. Major Sports.....	VIII	MW	151WGm	Ar
22f-23w-24s* ¶	Soph. Elem. Swimming.....	IV	MW	51WGm	Ar
		VI	MW	51WGm	Ar
		II	TTh	51WGm	Ar
		III	MTh	51WGm	Ar
		III	TF	51WGm	Ar
		IV	TS	51WGm	Ar
		VI	TTh	51WGm	Ar
		VII	TTh	51WGm	Ar
28f-29w-28s* ¶	Sophomore Adv. Swim.....	VII	MW	51WGm	Ar
		III	WS	51WGm	Ar
32w*	Personal Hygiene.....	III	TThS	201WGm	Ar
33s*	Hygiene of the Family.....	II	MWF	201WGm	Dr. Norris
34f-35w-36s*‡	Intermed. Phys. Train.....	VI	TTh	153WGm	Ar
40f-41w-42s*	Interpretive Dancing.....	IV	TS	151WGm	Miss Baker
43f-44w-45s*§	Folk-Dancing and Organized Games	V	TThF	151WGm	Miss Kissock
46f-47w-48s*‡	Hockey, Basket-Ball, Base-ball	VIII	TTh	151WGm	Ar
49f,w,s*	General Swimming.....	VIII	MTWTh	51WGm	No instr.

*Offered on the Minneapolis campus.

‡ The third quarter is open to students who have not taken the preceding quarters.

§ The second or third quarter of this course is open to students who have not had the first two quarters.

¶ No student may register for more than two quarters of swimming without permission.

PHYSICS

COLLEGE OF SCIENCE, LITERATURE, AND THE ARTS

No.	Title	Credits	Offered to	Prerequisite courses
1	Elements of Mechanics and Sound	3	All	Trigonometry
2	Elements of Mechanics Lab- oratory	1	All	1 or parallel
9	Acoustics	3	All	None
21	Heat	3	All	1
22	Heat Laboratory.....	1	All	2, 21 or parallel
31	Optics	3	All	1
32	Optics Laboratory.....	1	All	2, 31 or parallel
41	Magnetism and Electricity...	3	All	1
42	Magnetism and Electricity Laboratory	1	All	2, 41 or parallel

For additional courses see the bulletin of the College of Science, Literature, and the Arts.

PHYSICS

COLLEGE OF SCIENCE, LITERATURE, AND THE ARTS

No.	Title	Hour	Day	Room	Instructor
1f,w*	Elements of Mechanics and Sound				
	Lect.	VII	MWF	30Ph	Mr. Erikson
	Quiz	VIII	W	100C	Mr. Erikson
1s*	Elements of Mechanics and Sound				
	Lect.	III	TThS	30Ph	Mr. Erikson
	Quiz	VIII	W	100C	Mr. Erikson
2f,w,s*	Elements of Mechanics Laboratory				
	Sec. 1	V, VI	T	16Ph	Mr. Erikson
	2	VII, VIII	T	16Ph	Mr. Erikson
	3	V, VI	Th	16Ph	Mr. Erikson
	4	VII, VIII	Th	16Ph	Mr. Erikson
9s*	Acoustics	Ar	Ar	30Ph	Mr. Erikson
21f,w*	Heat				
	Lect.	III	TThS	30Ph	Mr. Miller
	Quiz	VIII	W	100C	Mr. Miller
22f,w*	Heat Laboratory.....				
	Sec. 1	V, VI	M	23Ph	Mr. Miller
	2	VII, VIII	M	23Ph	Mr. Miller
	3	V, VI	T	23Ph	Mr. Miller
	4	VII, VIII	T	23Ph	Mr. Miller
31f,s*	Optics				
	Lect.	I	TThS	30Ph	Mr. Valasek
	Quiz	VIII	W	100C	Mr. Valasek
32f,s*	Optics Laboratory.....				
	Sec. 1	V, VI	Th	23Ph	Mr. Valasek
	2	VII, VIII	Th	23Ph	Mr. Valasek
	3	V, VI	F	23Ph	Mr. Valasek
	4	VII, VIII	F	23Ph	Mr. Valasek
41w,s*	Magnetism and Electricity...				
	Lect.	III	TThS	30Ph	Mr. Zeleny
	Quiz	VIII	W	100C	Mr. Zeleny
42w,s*	Electrical Laboratory.....				
	Sec. 1	V, VI	T	31Ph	Mr. Zeleny
	2	VII, VIII	T	31Ph	Mr. Zeleny
	3	V, VI	Th	31Ph	Mr. Zeleny
	4	VII, VIII	Th	31Ph	Mr. Zeleny
	5	V, VI	W	31Ph	Mr. Zeleny
	6	VII, VIII	W	31Ph	Mr. Zeleny

*Offered on the Minneapolis campus.

PHYSIOLOGY MEDICAL SCHOOL

No.	Title	Credits	Offered to	Prerequisite courses
4	Human Physiology.....	5	All	Chem. 10 cred., biol. 8 cred.
100-101	Physiologic Chemistry.....	12	Jr., sr.	Org. chem., physics, an. biol.
103	Physiology of Muscle, Nerve, Blood, Circulation, and Di- gestion	8	Jr., sr.	Org. chem., an. biol., physics
104	Physiology of the Nervous System and Special Senses	8	Jr., sr.	Org. chem., an. biol., physics
150	Some Newer Aspects of Nu- trition	3	Sr.	101
153	Advanced Physiologic Chem- istry	3	Sr.	101
163	Metabolism	2 or 3	Sr.	101

For additional courses see the bulletin of the Medical School.

PLANT PATHOLOGY AND BOTANY

No.	Title	Credits	Offered to	Prerequisite courses
1	Plant Pathology.....	5	Jr., sr.	Bot. 9 cred.
7	Weeds and Grasses.....	3	Soph., jr., sr.	Bot. 9 cred.
9	Weeds and Seed-Testing....	3	Soph., jr., sr.	Bot. 9 cred.
10	Forest Pathology.....	5	Soph., jr., sr.	Bot. 9 cred.
12	Seed Problems.....	3	Jr., sr.	9
14	Plant-Disease Control.....	5	Jr., sr.	1, Ent. 1 or 3
105-106-107	Mycology	9	Jr., sr.	Bot. 7, 11 or equiv.
108-109	Methods	6	Jr., sr.	1, Bact. 1
110	Principles of Pathology.....	3	Jr., sr.	1, Bact. 1
111	Diseases of Field Crops.....	3	Jr., sr.	1
112	Diseases of Fruit and Vege- table Crops.....	3	Jr., sr.	1

PHYSIOLOGY

MEDICAL SCHOOL

No.	Title	Hour	Day	Room	Instructor
4f,w,s*	Human Physiology.....				
	Lab.	I, II, III	Th	315MH	Miss Greisheimer
	Lect.	I	MTWFS	301MH	Miss Greisheimer
100f-101w*	Physiologic Chemistry.....	I, II, III	TThS	310MH	Mr. Pettibone, Mr. Kingsbury
103f*	Physiology of Muscles, etc..	IV, V, VI, VII	MWF	301MH	Mr. Scott
104w*	Physiology of Nervous System, etc.....	IV, V, VI, VII	MWF	301MH	Mr. Scott
150f*	Some Newer Aspects of Nutrition	Ar	Ar	Ar	Mr. Pettibone
153f,w,s*	Advanced Physiologic Chemistry	Ar	Ar	310MH	Mr. Pettibone or Mr. Kingsbury
163s*	Metabolism	VI, VII, VIII	TTh	310MH	Mr. Pettibone

PLANT PATHOLOGY AND BOTANY

No.	Title	Hour	Day	Room	Instructor
1f†	Plant Pathology.....	V, VI, VII, VIII	MWF	1,2PP	Mr. Stakman, Mr. Leach, Mr. Seal
7w	Weeds and Grasses I.....	V, VI, VII	WF	3PP	Mr. Larson
9f†	Weeds and Seed-Testing....	V, VI, VII	WF	3,4PP	Mr. Larson
10f	Forest Pathology.....	V, VI, VII, VIII	MWF	1,2PP	Mr. Stakman, Mr. Leach, Mr. Seal
12w	Seed Problems.....	Ar	Ar	Ar	Mr. Larson
14†	Plant-Disease Control.....	..	..	..	.....
105f-106w- 107s	Mycology	III, IV	MWF	1,3,2PP	Mr. Freeman, Mr. Stakman, Miss Dosdall
108f-109w	Methods	I, II	MWF	1,30PP	Mr. Stakman, Mr. Leach
110s	Principles of Pathology.....	I, II	MWF	1,30PP	Mr. Stakman, Mr. Barker
111w†	Diseases of Field Crops.....	V, VI	MWF	1,2PP	Mr. Stakman, Mr. Barker
112s†	Diseases of Fruit and Vegetable Crops.....	V, VI	MWF	1,2PP	.....

*Offered on the Minneapolis campus.

† Offered also in the summer session.

‡ Not offered in 1921-22.

POLITICAL SCIENCE

COLLEGE OF SCIENCE, LITERATURE, AND THE ARTS

No.	Title	Credits	Offered to	Prerequisite courses
1	American Government.....	5	Soph., jr., sr.	None
7	State and Local Government	5	Soph., jr., sr.	1

For additional courses see the bulletin of the College of Science, Literature, and the Arts.

POULTRY HUSBANDRY

ANIMAL INDUSTRY GROUP

No.	Title	Credits	Offered to	Prerequisite courses
1	Poultry	3	All	None
2	Poultry-Judging	3	All	None
4	Incubating and Brooding...	3	All	None
5	Advanced Poultry-Judging...	3	All	2

PSYCHOLOGY

COLLEGE OF SCIENCE, LITERATURE, AND THE ARTS

No.	Title	Credits	Offered to	Prerequisite courses
1-2-3	General Psychology.....	9‡	Soph., jr., sr.	None
4-5	Introductory Laboratory			
	Psychology	4†	Soph., jr., sr.	1-2 or parallel
7	Introductory Laboratory			
	Psychology	4	Soph., jr., sr.	1-2 or parallel
101-102	Experimental Psychology....	6†	Jr., sr.	1-2, 4-5, or 7

† The full course must be completed before credit will be allowed.

‡ Six credits will be allowed for the first two quarters.

POLITICAL SCIENCE

COLLEGE OF SCIENCE, LITERATURE, AND THE ARTS

No.	Title	Hour	Day	Room	Instructor
1f*	American Government.....				
	Sec. 1	IV	MTWFS	LitTh	Ar
	2	VI	MTWThF	306D	Ar
1W*	American Government.....				
	Sec. 1	IV	MTWFS	LitTh	Ar
	2	VI	MTWThF	306D	Ar
1S*	American Government.....				
	Sec. 1	IV	MTWFS	LitTh	Ar
	2	VI	MTWThF	LitTh	Ar
7f*	State and Local Government	VI	MTWThF	308D	Mr. Cushman
7W*	State and Local Government	VI	MTWThF	109MA	Mr. Cushman
7S*	State and Local Government	VI	MTWThF	209MA	Mr. Cushman

POULTRY HUSBANDRY

No.	Title	Hour	Day	Room	Instructor
1f,w	Poultry	V	MWF	104Ve	Mr. Smith
2W	Poultry-Judging	Ar	Ar	Ar	Mr. Smith
4S	Incubating and Brooding....	V	MWF	104Ve	Mr. Smith
5S	Advanced Poultry-Judging...	Ar	Ar	Ar	Mr. Smith

PSYCHOLOGY

COLLEGE OF SCIENCE, LITERATURE, AND THE ARTS

No.	Title	Hour	Day	Room	Instructor
1f-2W*	General Psychology.....				
	Lect. Sec. 1	I	MW	LitTh	Mr. Elliott, Mr. Foster
	2	VII	MW	LitTh	Mr. Elliott, Mr. Foster
	Rec. Sec. 1	III	S	Psy	
	2, 3	VII	Th or F	Psy	
3S*	General Psychology (cont.)..				
	Lect.	I	MW	LitTh	Mr. Elliott
	Rec. Sec. 1	I	Th or F or S	Psy	
	2	III	Th or F or S	Psy	
	3	V	Th or F	Psy	
	4	VII	Th or F	Psy	
4f-5W*	Introductory Laboratory Psychology				
	Sec. 1	I, II	TTh	211Psy	Mr. Foster
	2	III, IV	TS	211Psy	
	3	V, VI	TTh	211Psy	
	4	VII, VIII	TTh	211Psy	
7S*	Introductory Laboratory Psychology				
	Sec. 1	V, VI	MTWF	211Psy	
	2	III, IV	MTWF	211Psy	
101f-102W*	Experimental Psychology....	VI	MWF		
		VII	WF	116Psy	Miss Fernald

*Offered on the Minneapolis campus.

COURSES IN AGRICULTURE

108-109	Advanced General Psychology	6†	Sr.	101-102 or by permission
114-115	Human Behavior.....	6†	Jr., sr.	1-2, 4-5 or 7, 9 cr. an. biol., or by permission
119-120	Animal Behavior.....	6†	Jr., sr.	1-2, 4-5 or 7, 9 cr. an. biol., or by permission
121	Neuro-Psychology	3	Jr., sr.	1-2, 4-5 or 7, 9 cr. an. biol., or by permission
125-126	Differential Psychology.....	6†	Jr., sr.	1-2, 4-5 or 7
127	Social Psychology.....	5	Jr., sr.	1-2, 4-5 or 7
135-136	Dynamic Psychology.....	6†	Jr., sr.	1-2, 4-5 or 7
144-145	Abnormal Psychology.....	6†	Jr., sr.	1-2, 4-5 or 7

For additional courses see the bulletin of the College of Science, Literature, and the Arts.

PUBLICATIONS AND RURAL JOURNALISM

No.	Title	Credits	Offered to	Prerequisite courses
10-11-12	Agricultural Journalism.....	9	Jr., sr.	13-14-15, 16-17
19	Agricultural Publicity.....	3	Jr., sr.	Rhet. 19 cred. or rhet. 9 cred., Eng. 9 cred.

RHETORIC

No.	Title	Credits	Required of	Prerequisite courses
1	Rhetoric I.....	3	All	None
2	Rhetoric II.....	3	All	1
3	Rhetoric III.....	3	All	2
4	Elementary Rhetoric.....	3	All	None

† The full course must be completed before credit will be allowed.

PROGRAM

129

No.	Title	Hour	Day	Room	Instructor
108w-109s*	Advanced General Psychology	II	MWF	109Psy	.....
114w-115s*	Human Behavior.....	II	TThS	109Psy	Mr. Elliott
119f-120w*	Animal Behavior.....	VI	MWF		Mr. Lashley
		VII	WF	109Psy	Mr. Lashley
121s*	Neuropsychology	VI	MWF		Mr. Lashley
		VII	WF	109Psy	Mr. Lashley
125f-126w*	Differential Psychology.....	III	MWF	109Psy	Miss Fernald
127s*	Social Psychology.....	IV	MTWFS	115Psy	Mr. Bird
135w-136s*	Dynamic Psychology.....	III	TThS	115Psy	Mr. Woodrow
144f-145w*	Abnormal Psychology.....	IV	MWF	109Psy	Mr. Lashley

PUBLICATIONS AND RURAL JOURNALISM

No.	Title	Hour	Day	Room	Instructor
10f-11w-12s	Agricultural Journalism.....	V	MWF	317Ad	Mr. Kirkwood
19f	Agricultural Publicity.....	I	TThS	4PP	Mr. Kirkwood

RHETORIC

No.	Title	Hour	Day	Room	Instructor
1f	Rhetoric I.....				
	Sec. 1	I	MWF	310En	Miss Jenkins
	2	II	MWF	310En	Miss Jenkins
	3	III	MWF	310En	Miss Clausen
	4	IV	MWF	310En	Miss Clausen
	5	II	TThS	310En	Miss Jenkins
1w,s	Rhetoric I.....	VI	MWF	308En	Miss Clausen
2f,s	Rhetoric II.....	II	MWF	311En	Miss Clausen
2w	Rhetoric II.....				
	Sec. 1	II	MWF	310En	Miss Jenkins
	2	IV	MWF	310En	Miss Jenkins
	3	IV	MWF	217En	Miss Clausen
	4	I	TThS	310En	Miss Clausen
	5	II	TThS	310En	Miss Jenkins
3f	Rhetoric III.....	III	TThS	310En	Miss Jenkins
3w	Rhetoric III.....	III	MWF	310En	Miss Jenkins
3s	Rhetoric III.....				
	Sec. 1	II	MWF	310En	Miss Jenkins
	2	IV	MWF	310En	Miss Clausen
	3	IV	MWF	307En	Miss Jenkins
	4	I	TThS	310En	Miss Jenkins
	5	II	MWF	307En	Miss Clausen
4f,w,s	Elementary Rhetoric.....	Ar	Ar	Ar	Miss Jenkins

*Offered on the Minneapolis campus.

COURSES IN AGRICULTURE

No.	Title	Credits	Offered to	Prerequisite courses
11	Argumentation	3	Soph., jr., sr.	3
22	Public Speaking.....	3	Soph., jr., sr.	3
24	Advanced Public Speaking..	3	Soph., jr., sr.	22
31	Survey of English Literature I	5	Soph., jr., sr.	3
32	Survey of English Literature II	3	Soph., jr., sr.	31

ROMANCE LANGUAGES

COLLEGE OF SCIENCE, LITERATURE, AND THE ARTS

French

No.	Title	Credits	Offered to	Prerequisite courses
1-2	Beginning French.....	10†	All	None
3-4	Intermediate French.....	10	All	1-2 or 2 yrs. h. s.

† The full course must be completed before credit will be allowed.

PROGRAM

131

No.	Title	Hour	Day	Room	Instructor
11f	Argumentation				
	Sec. 1	I	MWThFS	311En	Mr. Lansing
	2	IV	MTWFS	311En	Mr. Burtis
11W	Argumentation	III	MTWFS	311En	Mr. Burtis
11S	Argumentation	III	MTWFS	307En	Mr. Lansing
22f	Public Speaking.....	III	MTWFS	311En	Mr. Burtis
22W	Public Speaking.....				
	Sec. 1	I	MTWFS	311En	Mr. Burtis
	2	IV	MTWFS	311En	Mr. Burtis
22S	Public Speaking.....				
	Sec. 1	III	MTWFS	311En	Mr. Burtis
	2	IV	MTWFS	311En	Mr. Burtis
24f,w,s	Advanced Public Speaking..	II	TThS	311En	Mr. Burtis
31f,w,s	Survey of English Literature				
	I	II	MWThFS	306En	Mr. Lansing
32w,s	Survey of English Literature				
	II	I	MWF	310En	Mr. Lansing

ROMANCE LANGUAGES

COLLEGE OF SCIENCE, LITERATURE, AND THE ARTS

<i>French</i>					
No.	Title	Hour	Day	Room	Instructor
1f-2w*	Beginning French.....				
	Sec. 1	I	TWThFS	213F	Ar
	2	II	MWThFS	227F	Ar
	3	III	MTThFS	226F	Ar
	4	IV	MTWFS	201F	Ar
	5	V	MTWThF	226F	Ar
	6	VI	MTWThF	202F	Ar
1W-2S*	Beginning French.....				
	Sec. 1	I	TWThFS	227F	Ar
	2	V	MTWThF	202F	Ar
1S*	Beginning French.....				
	Sec. 1	Ar	Ar	Ar	Ar
	2	Ar	Ar	Ar	Ar
2f*	Beginning French.....				
	Sec. 1	I	TWThFS	202F	Ar
	2	V	MTWThF	213F	Ar
3f-4w*	Intermediate French.....				
	Sec. 1	I	TWThFS	205F	Ar
	2	II	MWThFS	204F	Ar
	3	III	MTThFS	213F	Ar
	4	VI	MTWThF	213F	Ar
3W-4S*	Intermediate French.....				
	Sec. 1	I	TWThFS	202F	Ar
	2	V	MTWThF	213F	Ar
3S*	Intermediate French.....				
	Sec. 1	I	TWThFS	213F	Ar
	2	II	MWThFS	227F	Ar
	3	III	MTThFS	226F	Ar
	4	IV	MTWFS	201F	Ar
	5	V	MTWThF	226F	Ar
	6	VI	MTWThF	202F	Ar

*Offered on the Minneapolis campus.

COURSES IN AGRICULTURE

No.	Title	Credits	Offered to	Prerequisite courses
20	Oral and Written French...	5	All	3-4 or 3 yrs. h. s.
21-22-23	Survey of French Literature	9†	All	3-4 or 3 yrs. h. s.
50-51-52	French Conversation.....	3†	Jr.,‡ sr.	3-4 or 3 yrs. h. s., 53-54-55 or parallel
53-54-55	French Composition.....	3†	Jr.,‡ sr.	3-4 or 3 yrs. h. s.

For additional courses see the bulletin of the College of Science, Literature, and the Arts.

Spanish

No.	Title	Credits	Offered to	Prerequisite courses
1-2	Beginning Spanish.....	10†	All	None

† The full course must be completed before credit will be allowed.

‡ Open without petition to sophomores who can satisfy the requirements.

PROGRAM

133

No.	Title	Hour	Day	Room	Instructor
4f*	Intermediate French.....				
	Sec. 1	I	TWThFS	227F	Ar
	2	II	MWThFS	213F	Ar
	3	III	MTThFS	124F	Ar
	4	IV	MTWFS	125F	Ar
	5	V	MTWThF	202F	Ar
20f*	Oral and Written French....				
	Sec. 1	III	MTThFS	205F	Mr. Frelin
	2	VI	MTWThF	206F	Ar
20s*	Oral and Written French....				
	Sec. 1	I	TWThFS	15F	Ar
	2	II	MWThFS	213F	Ar
	3	VI	MTWThF	213F	Ar
21f-22w-23s*	Survey of French Literature				
	Sec. 1	II	TThS	107F	Mr. Barton
	2	III	TThS	301F	Mr. Sirich
	3	VI	MWF	107F	Mr. Searles
50f-51w-52s*	French Conversation.....				
	Sec. 1	III	MW	201F	Miss Guinotte
	2	V	MW	107F	Mr. Frelin
53f-54w-55s*	French Composition.....				
	Sec. 1	III	F	201F	Miss Guinotte
	2	V	F	107F	Mr. Frelin

ROMANCE LANGUAGES

COLLEGE OF SCIENCE, LITERATURE, AND THE ARTS

No.	Title	<i>Spanish</i> Hour	Day	Room	Instructor
1f-2w*	Beginning Spanish.....				
	Sec. 1	I	TWThFS	15F	Ar
	2	II	MWThFS	226F	Ar
	3	III	MTThFS	227F	Ar
	4	IV	MTWFS	226F	Ar
	5	V	MTWThF	201F	Ar
	6	VI	MTWThF	226F	Ar
1w-2s*	Beginning Spanish.....				
	Sec. 1	II	TWThFS	202F	Ar
	2	VI	MTWThF	125F	Ar
1s*	Beginning Spanish.....				
	Sec. 1	II	TWThFS	201F	Ar
	2	VI	MTWThF	226F	Ar
2f*	Beginning Spanish.....				
	Sec. 1	I	TWThFS	201F	Ar
	2	VI	MTWThF	201F	Ar
3f-4w*	Intermediate Spanish.....				
	Sec. 1	II	MWThFS	201F	Ar
	2	III	MTThFS	202F	Ar
	3	V	MTWThF	109F	Ar
3w-4s*	Intermediate Spanish.....				
	Sec. 1	I	TWThFS	201F	Ar
	2	VI	MTWThF	201F	Ar

*Offered on the Minneapolis campus.

COURSES IN AGRICULTURE

No.	Title	Credits	Offered to	Prerequisite courses
3-4	Intermediate Spanish.....	10	All	1-2 or 2 yrs. h. s.
20	Oral and Written Spanish..	5	All	3-4 or 3 yrs. h. s.
50-51-52	Spanish Conversation.....	3†	Jr.,‡ sr.	3-4 or 3 yrs. h. s., 53-54-55 or parallel
53-54-55	Spanish Composition.....	3†	Jr.,‡ sr.	3-4 or 3 yrs. h. s.
65-66-67	Survey of Spanish Literature	9†	Jr.,‡ sr.	3-4

For additional courses see the bulletin of the College of Science, Literature, and the Arts.

SOCIOLOGY AND SOCIAL WORK

COLLEGE OF SCIENCE, LITERATURE, AND THE ARTS

No.	Title	Credits	Offered to	Prerequisite courses
1	Introduction to Sociology....	3†† or 5	3d qu. fr., soph., jr., sr.	None
6	Modern Social Reform: Move- ments	3	Soph., jr., sr.	

† The full course must be completed before credit will be allowed.

‡ Open without petition to sophomores who can satisfy the requirements.

†† A 3-credit course, open only to students in Agriculture, Forestry, and Home Economics will be offered at University Farm in the fall and spring quarters.

No.	Title	Hour	Day	Room	Instructor
3s*	Intermediate Spanish.....				
	Sec. 1	I	TWThFS	226F	Ar
	2	II	MWThFS	226F	Ar
	3	III	MTThFS	227F	Ar
	4	IV	MTWFS	226F	Ar
	5	V	MTWThF	201F	Ar
	6	VI	MTWThF	227F	Ar
(3s)-4f*	Intermediate Spanish.....				
	Sec. 1	I	TWThFS	301F	Ar
	2	II	MWThFS	202F	Ar
	3	III	MTThFS	308D	Ar
	4	IV	MTWFS	202F	Ar
	5	V	MTWThF	227F	Ar
20s*	Oral and Written Spanish...	III	MTThFS	202F	Ar
50f-51w-52s*	Spanish Conversation.....	II	MW	302D	Mr. House
53f-54w-55s*	Spanish Composition.....	II	F	302D	Mr. House
65f-66w-67s*	Survey of Spanish Literature	II	TThS	306F	Mr. House

SOCIOLOGY AND SOCIAL WORK

COLLEGE OF SCIENCE, LITERATURE, AND THE ARTS

No.	Title	Hour	Day	Room	Instructor
1f	Introduction to Sociology....				
	Sec. 1*	I	TWThFS	9F	
	2*	III	MTThFS	5F	
	3*	IV	MTWFS	301F	
	4, 5*	V	MTWThF	5F, 9F	
	6*	VI	MTWThF	9F	
	7 (3 cred.)	IV	MWF	105En	Mr. Lundquist
1w	Introduction to Sociology....				
	Sec. 1*	I	TWThFS	9F	
	2*	III	MTThFS	5F	
	3*	IV	MTWFS	301F	
	4, 5*	V	MTWThF	5F, 9F	
	6*	VI	MTWThF	9F	
	7*	VII	MTWThF	110F	
	8 (3 cred.)	IV	MWF	105En	Mr. Lundquist
1s	Introduction to Sociology....				
	Sec. 1*	I	TWThFS	9F	
	2*	II	MWThFS	5F	
	3*	III	MTThFS	5F	
	4*	IV	MTWFS	301F	
	5, 6*	V	MTWThF	5F, 9F	
	7*	VI	MTWThF	9F	
	8*	VII	MTWThF	110F	
	9 (3 cred.)	IV	MWF	105En	Mr. Lundquist
6f*	Modern Social Reform Move- ments				
	Sec. 1	II	TThS	102F	Ar
	2	IV	MWF	5F	Ar
	3	V	MWF	110F	Ar
	4	VI	MWF	5F	

*Offered on the Minneapolis campus.

COURSES IN AGRICULTURE

No.	Title	Credits	Offered to	Prerequisite courses
14	Rural Sociology.....	3	Soph., jr., sr.	1‡
51	Background of Dependency and Defectiveness.....	3	Jr., sr.	10 cred. in sociol.; or 10 cred. in sociol. and pol. sci.; econ. or psychol.
52	Treatment of Dependents and Defectives	3	Jr., sr.	51
53	Treatment of Delinquents...	3	Jr., sr.	Same as for 51
55	Housing Problems.....	3	Jr., sr.	Same as for 51
56	Field Practice in Case Work	2	Jr., sr.	51 parallel

‡ No prerequisite for seniors in the College of Agriculture, Forestry, and Home Economics.

No.	Title	Hour	Day	Room	Instructor
6w*	Modern Social Reform Movements				
	Sec. 1	II	TThS	301F	Ar
	2	IV	MWF	5F	Ar
	3	V	MWF	110F	Ar
	4	VI	MWF	5F	
6s*	Modern Social Reform Movements				
	Sec. 1	II	TThS	301F	Ar
	3	IV	MWF	5F	Ar
	4	V	MWF	110F	Ar
	5	VI	MWF	5F	
14f	Rural Sociology.....				
	Sec. 1*	III	MWF	25F	Ar
	2*	V	MWF	25F	Ar
	3	I	MWF	105En	Mr. Lundquist
14w	Rural Sociology.....				
	Sec. 1*	III	MWF	9F	Ar
	2*	V	MWF	25F	Ar
	3	I	MWF	105En	Mr. Lundquist
14s	Rural Sociology.....				
	Sec. 1*	III	MWF	25F	Ar
	2*	V	MWF	15F	Ar
51f*	Background of Dependents and Defectives.....	I	TThS	5F	Mr. Bruno
51w*	Background of Dependents and Defectives.....	I	MWF	5F	Mr. Bruno
51s*	Background of Dependents and Defectives.....	I	TThS	5F	Mr. Bruno
52w*	Treatment of Dependents and Defectives.....	I	TThS	5F	Mr. Bruno
52s*	Treatment of Dependents and Defectives.....	I	MWF	5F	Mr. Bruno
53f*	Treatment of Delinquents...	III	MWF	9F	
53w*	Treatment of Delinquents...	III	MWF	101F	
53s*	Treatment of Delinquents...	III	MWF	101F	
55w*	Housing Problems.....	I	MWF	101F	Mr. Davis
56f*	Field Practice in Case Work				
	Sec. 1	I, II, III	MW		Mrs. Mudgett
	2	I, II, III	WF		
	3	V, VI, VII	MW		
	4	V, VI, VII	TTh		
	5	V, VI, VII	WF		
56w*	Field Practice in Case Work				
	Sec. 1	II, III, IV	MW		Mrs. Mudgett
	2	II, III, IV	WF		
	3	V, VI, VII	MW		
	4	V, VI, VII	WF		
	5	V, VI, VII	TTh		
56s*	Field Practice in Case Work				
	Sec. 1	V, VI, VII	MW		Mrs. Mudgett
	2	V, VI, VII	WF		
	3	II, III, IV	TTh		
	4	V, VI, VII	TTh		

*Offered on the Minneapolis campus.

No.	Title	Credits	Offered to	Prerequisite courses
57	Field Practice in Case Work	2	Jr., sr.	52 parallel
60	Child Welfare.....	3	Jr., sr.	52
97-98-99	Supervised Field Practice Work	3, 6 or 9	Jr., sr.	Director's consent
100	Social Psychology.....	3	Jr., sr.	1 and 15 cred. in sociol.; anthro.; econ.; educ.; hist.; philos.; pol. sci.; or psychol. includ- ing Psychol. 1-2
101	Social Organization.....	3	Jr., sr.	4 courses in sociol. or 1 and 15 cred. in sociol.; anth.; econ.; educ.; hist.; philos.; pol. sci.; or psychol.
102	Social Control.....	3	Jr., sr.	Same as for 101
110	Community Organization and Social Work in Small Towns and Country.....	2	Jr., sr.	Same as for 101
114	Rural Social Institutions....	3	Jr., sr.	Same as for 101
119	The Family.....	3	Jr., sr.	Same as for 101
120	Social Progress.....	3	Jr., sr.	Same as for 101
122	Methods of Social Investiga- tion	3	Jr., sr.	Same as for 101
123	Social Statistics.....	3	Jr., sr.	122
128	Charitable Administration. Finance, and Publicity....	2	Jr., sr.	Same as for 101
130	Technic of Family Treatment	2	Jr., sr.	Same as for 101 including 52
134	Legal Protection of the Child	3	Jr., sr.	Same as for 101 including 60
138-139	Mental Case Work.....	6	Jr., sr.	Same as for 130
140	History of Social Theory...	3	Jr., sr.	Same as for 101
141	Contemporary Social Theory	3	Jr., sr.	Same as for 101
150	Seminar: The Literature of Social Protest.....		Sr.	Consent of director
180-181-182	Seminar in Educational Soci- ology	6	Jr., sr.	1, 6, 120

For additional courses see the bulletin of the College of Science, Literature, and the Arts.

No.	Title	Hour	Day	Room	Instructor
57w*	Field Practice in Case Work				
	Sec. 1	II, III, IV	MW		Mrs. Mudgett
	2	II, III, IV	WF		
	3	V, VI, VII	MW		
	4	V, VI, VII	WF		
	5	V, VI, VII	TTh		
57s*	Field Practice in Case Work				
	Sec. 1	V, VI, VII	MW		Mrs. Mudgett
	2	V, VI, VII	WF		
	3	II, III, IV	TTh		
	4	V, VI, VII	TTh		
60w*	Child Welfare.....	VIII	MWF	9F	Mr. Hodson
97f-98w-99s*	Supervised Field Practice				
	Work	Ar	Ar	Ar	Mrs. Mudgett
100f*	Social Psychology.....	II	TThS	9F	Mr. Bernard
101w*	Social Organization.....	II	TThS	9F	Mr. Bernard
102s*	Social Control.....	II	TThS	9F	Mr. Bernard
110w*	Community Organ. and So-				
	cial Work in Small Towns				
	and Country.....	VII-VIII	Th	9F	Mr. Bernard
114s	Rural Social Institutions...	I	MWF	105En	Mr. Lundquist
119f*	The Family.....	III	TThS	9F	
120f*	Social Progress.....	II	MWF	9F	
122w*	Methods of Social Investiga-				
	tion	VII	MWF	9F	Mr. Elmer
123s*	Social Statistics.....	VII	MWF	9F	Mr. Elmer
128s*	Charitable Administration,				
	Finance, and Publicity....	VII-VIII	Th	9F	Mr. Davis
130s*	Technic of Family Treat-				
	ment	VII-VIII	T	9F	Mr. Bruno
134s*	Legal Protection of the Child	VIII	MWF	9F	Mr. Hodson
135w*	Mental Case Work.....	VII, VIII	T and Ar	5F	Miss Seeberg
139s*	Mental Case Work.....	VIII	Th and Ar	5F	Miss Seeberg
140w*	History of Social Theory...	II	MWF	9F	Mr. Bernard
141s*	Contemp. Social Theory....	II	MWF	9F	Mr. Bernard
180f-181w-		VIII-IX	M	Ed	Mr. Finney
182s*	Seminar in Educ. Sociol....				

*Offered on the Minneapolis campus.

COURSES IN AGRICULTURE

SOILS

No.	Title	Credits	Offered to	Prerequisite courses
4	Soils	3	Soph., jr., sr.	Chem. 10 cred.
5	Soil Fertility.....	3	Soph., jr., sr.	4
101	Chemical Analysis of Soils..	3-5	Jr., sr.	5, quant. anal.
102	Special Problems in Soils....	*	Jr., sr.	101 or 108
104	Soil-Surveying	3	Jr., sr.	108
105	Minnesota Soils.....	3	Jr., sr.	5
106	Peat Soils.....	2	Jr., sr.	5
107	Fertilizers and Manures....	2	Jr., sr.	5
108	Physical Properties of Soils..	3	Jr., sr.	5

VETERINARY MEDICINE

ANIMAL INDUSTRY GROUP

No.	Title	Credits	Offered to	Prerequisite courses
2	Anatomy of Domestic Animals	5	Soph., jr., sr.	None
3-4	Comparative Physiology....	6	Soph., jr., sr.	2
6	Physiology and Hygiene of Breeding	3	Jr., sr.	3-4
8	Veterinary Studies.....	5	Soph., jr., sr.	None
12	Infectious Diseases.....	3	Jr., sr.	3-4, Bact. 1
13	Non-Infectious Diseases....	3	Jr., sr.	3-4
101-102	Advanced Anatomy of Domestic Animals.....	6	Jr., sr.	2 or equiv.
103-104	Advanced Comparative Physi- ology	6	Jr., sr.	3-4 or equiv.

* Credit according to the amount of work.

PROGRAM

141

SOILS

No.	Title	Hour	Day	Room	Instructor
4f	Soils				
	Lect.	III	TTh	251Ch	Mr. Rost
	Lab.	III, IV	S	253Ch	
5s	Soil Fertility.....				
	Lect.	III	TTh	251Ch	Mr. Alway,
	Lab.	III, IV	S	253Ch	Mr. Rost
101f	Chemical Analysis of Soils..	Ar	Ar	Ar	Mr. Rost
102w,s	Special Problems in Soils...	Ar	Ar	Ar	Mr. Alway
104s	Soil-Surveying	Ar	Ar	Ar	Mr. McMiller
105w	Minnesota Soils.....	Ar	Ar	Ar	Mr. Alway
106w	Peat Soils.....	Ar	Ar	Ar	Mr. Alway
107w	Fertilizers and Manures.....	Ar	Ar	Ar	Mr. Rost
108w	Physical Properties of Soils	Ar	Ar	Ar	Mr. McMiller

VETERINARY MEDICINE

No.	Title	Hour	Day	Room	Instructor
2t	Anatomy of Domestic Animals	V	MTWF	2Ve	Mr. Kernkamp
		II	MWThFS	2Ve	Mr. Kernkamp
3w-4s	Comparative Physiology.....	I	TThS	2Ve	Mr. Hewitt
6f	Physiology and Hygiene of Breeding	IV	MWF	9Ve	Mr. Boyd
8s	Veterinary Studies.....	III	MTWFS	9Ve	Mr. Reynolds
12w	Infectious Diseases.....	I	MWF	2Ve	Mr. Fitch, Mr. Billings
13s	Non-Infectious Diseases.....	I	MWF	2Ve	Mr. Boyd
101w-102s	Advanced Anatomy of Domestic Animals.....	Ar	Ar	Ar	Mr. Kernkamp
	(Limited to 9)				
103f-104w	Advanced Comparative Physiology				
	Lect.	II	TTh	9Ve	Mr. Hewitt
	Lab.	V, VI	Th	9Ve	Mr. Hewitt



3 0112 105846999

INDEX

	Page		Page
Admission	15	General Agriculture Course.....	22
Agricultural Biochemistry	30, 36	General Information.....	15
Agricultural Economics.....	31	General Course in Agricultural	
<i>see also</i> Economics		Economics	23
Agricultural Education.....	23, 32, 37	General Course in Agricultural	
Agricultural Sciences, special		Extension	24
courses in.....	30	General Course in Animal Hus-	
Agricultural-Business Course.....	33	bandry	25
Agronomy and Farm Manage-		General Course in Dairy Hus-	
ment	32, 39	bandry	26
Animal Biology.....	41	General Course in Farm Manage-	
Animal Husbandry.....	32, 43	ment	27
		General Course in Horticulture...	29
Bacteriology and Immunology....	44	Geology and Mineralogy.....	58
Bee Culture	44	German	59
Botany	45	Gymnasium, <i>see</i> Physical Education	
		History and Philosophy of Educa-	
Calendar	5	tion	59
Chemistry	47	Home Economics	60
Committees, <i>see</i> Faculty committees		Horticulture	32, 60
Course numbers, explanation of..	18	Hour schedule.....	74
Courses of study in agriculture...	18		
Courses of study, open elective....	21	Journalism, <i>see</i> Rural Publications	
Courses of study, suggested elec-		and Journalism	
tive	22	Late admission.....	16
Dairy Husbandry.....	32, 48	Late registration.....	16
Degrees, requirements for.....	16	Major	18
Description of courses.....	36	Military Science and Tactics.....	62
Economics	49	Minor	18
Educational Administration and		Music	63
Supervision	53	Physical Education	63
Educational Psychology.....	53	Physics	64
Elective courses.....	20	Plant Pathology and Botany....	32, 65
Electives, free.....	18	Political Science.....	66
Elective groups.....	21	Poultry Husbandry.....	66
Electives, limited.....	18	Program of courses.....	74
Entomology and Economic Zool-		Psychology	67
ogy.....	32, 54		
Extension staff.....	11	Regulations, <i>see</i> Faculty regulations	
Faculty	7	Rhetoric	68
Faculty committees.....	14	Romance Languages.....	69
Faculty regulations.....	16	Rural Publications and Journalism	68
Farm Engineering.....	56	Sociology and Social Work.....	70
Farm Management, <i>see</i> Agronomy		Soils	33, 71
and Farm Management		Spanish, <i>see</i> Romance Languages	
Fees	15	Tabular statement of courses.....	74
Forestry	57	Teacher's certificates.....	17
Free tuition.....	15	Terms, explanation of.....	18
French, <i>see</i> Romance Languages			
Fur farming.....	28	Yrinalm Medicine.....	33, 72

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